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ABSTRACT

The activities of six physician specialties that care for patients with highly similar problems were compared. Factors that influence the doctor's tendency to treat more patients and to work more hours were also assessed, along with impacts of geographic factors on service delivery. Data were obtained from the Medical Activities and Manpower Projects of the University of Southern California, and the U.S. Bureau of Health Professions' Areas Resource File of secondary data related to medical practice. The following specialties were analyzed: family practitioners, internists, cardiologists, pediatricians, orthopedic surgeons, and emergency physicians. A case-mix index was created to measure the degree to which physicians concentrated on cases typical of the work of their specialties. In addition, a severity-complexity index was formulated to indicate the seriousness of each patient's presenting condition. Inferences based on the findings include the following: raising physicians' fees is not likely to increase the supply of physicians services already in an area; and increasing the use of aides will not allow physicians to see significantly more patients. Appendices include extensive statistical tables of study findings and information on the activities of female and emergency physicians. (SW)

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An Analysis of the Content of Specialty Practices and Their Service Capacities

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An Analysis of the Content of Specialty Practices and Their Service Capacities

March, 1981

Prepared for the
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
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Howard P. Greenwald, Project Director

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Foreword

One of the major responsibilities of the Office of Graduate Medical Education (OGME) and its Research and Analysis Branch includes assessing and projecting physician manpower needs by specialty. In pursuit of this objective, OGME has engaged in the development and support of various modeling and analytical activities aimed at understanding practice patterns within and among physician specialties. These activities have been carried out both by OGME staff and by contract studies.

One area of activity calls for analyzing a highly comprehensive data set produced for the Health Resources Administration. The data stem from a series of surveys performed by the University of Southern California and resulted in detailed practice profiles covering 24 medical and surgical specialties. This data set contains a rich source of material on physician specialty practice profiles that will require intensive analysis and assessment. The present report is among the first of an anticipated series of analyses of this data base.

This present report compares the activities of various physician specialties which care for patients with highly similar problems. It also assesses the influences which determine the practitioner's tendency to treat more patients and devote more hours to his or her practice. It is believed that the information contained in this report should be of value to all persons interested in graduate medical education and health manpower analysis.

The present report was prepared by Battelle Human Affairs Research Centers for the Office of Graduate Medical Education under contract number 232-79-0088. The authors of the report were Howard P. Greenwald, Project Director, Louis P. Garrison, L. Gary Hart, Edward B. Perrin, Principal Investigator, Malcom L. Peterson, Ira Moscovice, and Thomas Hall. Project Officer for the contract was Jerald Katzoff, Chief, Research and Analysis Branch, OGME.

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SUMMARY

Based on a newly assembled and highly comprehensive data set, this report addresses several of the key issues facing health manpower planners today. Policymakers in government, education, and health administration are presently confronted with the question of how to train and deploy the physician labor force in a manner likely to meet the public's needs at an acceptable cost. According to many analysts, the supply and price of physicians' services do not respond to market forces nearly as readily as other services. For this reason, policymakers have gained an increasing awareness that a simple increase in the supply of physicians may not alleviate perceived shortages, and that provision of adequate services may require concentration of resources on the training of the specialists in greatest demand and placing them in the areas of greatest need. The Graduate Medical Education National Advisory Committee, or GMENAC, has performed detailed studies of these and related issues over the past few years. The study reported here attempts to aid bodies sharing or continuing GMENAC's functions. In addition to extensive empirical findings, this report specifies a series of implications for policy, based on the deliberations of an interdisciplinary research team.

This report concentrates on three specific issues of concern to health manpower planners:

- What factors encourage or deter physicians from seeing more patients or working more hours?
- What differences in service delivery are detectable between specialties who care for patients with highly similar problems?
- What impacts do geographic factors have on the delivery of medical services?

The report which follows approaches these questions by comparing the activities of various specialties, and contrasting the responses of different specialties to influences such as the presence of aides in their practices and the absence of other doctors in their locales. Because physicians in the United States receive training and employment along specialty lines, solutions to today's problems in service delivery must take account of the patterns of practice peculiar to each specialty.

Data

The research reported here is based on a data set assembled from two distinct sources. The first, whose existence provided much of the impetus for this research, was a series of surveys performed by the University of Southern California (USC) Medical Activities and Manpower Projects. Covering twenty-four medical and surgical specialties, these surveys draw responses from approximately 10,000 physicians. Survey instruments requested information on physician characteristics (e.g., education), practice organization (e.g., solo, group, partnership), and office staffing. In addition, the surveys requested physicians to maintain log diary records of all patients seen for specified three-day periods. The USC surveys compiled records of nearly 400,000 physician-patient encounters. Survey activity took place between 1976 and 1978.

The second data source was the Area Resource File (ARF), a large file of secondary data related to medical practice compiled and maintained by the Bureau of Health Professions, DHHS. The ARF contains separate records for nearly every county in the United States. Each record includes detailed data on numbers of physicians in each major specialty, population, incidence and prevalence of selected diseases, infant mortality, and the like.

The research team which performed the research reported here selected six specialties for detailed analysis. These included family practitioners, internists, cardiologists, pediatricians, orthopedic surgeons, and emergency physicians. These specialties represented a broad cross-section of primary care physicians, along with one referral and one surgical specialty.

Before proceeding with substantive analysis, the research team performed an intensive review of the data quality in the USC files. An earlier study by the Battelle Human Affairs Research Centers in Seattle, Washington, contributed significantly to this effort. To determine the reliability of items on the USC survey instrument, the Battelle study compared responses to the original USC contact with responses to a later, follow-up questionnaire containing many of the same items. The research team's review determined that, despite problems, analysts could use much of the USC survey for investigation of a variety of questions. For use in its analysis, the research team selected specialties which appeared to differ from the universes from which they were drawn in generally minor ways, and questionnaire items which were deemed sufficiently reliable.

Selected data from the ARF and USC surveys were placed in parallel computer files; files containing subsets of data elements from each parallel file were created as needed.

Methods

The research team created a number of new variables to meet the special needs of its analysis. A case-mix index was created to measure the degree to which physicians concentrated on cases typical of the work of their specialties. A severity-complexity index was formulated to indicate the seriousness of each patient's presenting condition. Indices of these types were especially important for an interspecialty analysis. No valid comparisons among specialties would be possible without adjustment for the differing tasks and "products" of each specialty.

Researchers used contingency tables and multiple regression analysis in their substantive investigations. Cross-tabulation demonstrated basic relationships and identified interaction effects among variables. Multiple regression analysis demonstrated the relative importance of sets of variables in determining such outcomes as productivity and components of care.

Each phase of the research followed an analytical strategy geared specifically to its needs:

- Economic Analysis. Analysis of determinants of productivity and labor supply predicted numbers of patients seen and hours worked per week on the basis of physician's experience, employment of aides, price per visit, case-mix, and encounter time.
- Practice Pattern Analysis. Research on practice pattern differences among specialties predicted components of care--diagnostic and therapeutic techniques utilized during patient encounters--and encounter time on the basis of physician characteristics, patient characteristics, and site of encounter.
- Geographic Analysis. Investigation of the impact of geographic factors on medical activity predicted both productivity and practice patterns on the basis of all independent variables in the preceding practice pattern analysis, plus variables representing region, practice within an SMSA, practice in health manpower shortage areas, and similar spatially-related factors.

Findings

Productivity and Labor Supply

The analysis of productivity identified several significant determinants of patients seen per week. These included principally hours worked and average encounter time. While coefficients on specialty membership were significant in regression equations based on pooled specialty samples, their magnitudes dropped below the level of significance when measures of hours worked and mean encounter time were added to the equations. These and other statistics suggested that apparent differences in productivity both among specialties and individuals in a given specialty were largely due to differences in average encounter time. Further, these differences in average encounter time were for the most part unrelated to differences in case mix or case severity.

The hours worked per week by physicians, or their labor supply, was also investigated utilizing model specifications suggested by traditional health economics. As in most earlier investigations, only a small portion of the variance in weekly hours worked was explained. Regression results suggested that higher fees per visit were associated with physicians working fewer hours per week, an indication that the so-called backward-bending labor supply curve prevails in the physician labor market.

An investigation of the marginal returns to physician practice inputs such as hours per week, years of experience, and aides showed that none of these inputs had a large impact on the ability of physicians to see additional patients. Findings on the employment of aides were particularly surprising in that they suggest that physicians may not be seriously underutilizing aides, as is commonly thought. Research conducted on the basis of 1965 data suggested that the average United States physician could see thirty more patients per week if he or she hired one additional aide. But the research reported here puts this total at twelve or fewer.

Practice Patterns

The analysis of practice patterns focused on (1) components of care (diagnostic and therapeutic procedures) used and (2) amount of time spent by physicians during their encounters with patients. This segment of the study compared practice patterns followed by three or more specialties in the treatment of seven tracer conditions. These tracer conditions included essential benign hypertension, ischemic heart disease, asthma, URI and nasopharyngitis, tonsillitis and pharyngitis, low back pain, and pneumonia.

This phase of the research began with the null hypothesis that members of all specialties treated cases with the same clinical features in essentially the same manner. According to both cross-tabulation and multiple regression analysis, the null hypothesis was not substantiated. For given tracer conditions, physicians in different specialties appeared to provide specific components of care with significantly different frequencies. Generally, family practitioners ordered more systemic drugs than cardiologists or pediatricians, internists and pediatricians ordered more tests than family practitioners, and orthopedic surgeons ordered more X-rays than all other specialists treating low back pain. Multivariate analysis revealed that these differences remained significant even after controlling for a variety of potentially confounding variables--physician characteristics such as age and board certification, patient characteristics such as age, sex, comorbidity, and severity of disease, and encounter characteristics such as place of encounter and first versus follow-up visit.

Encounter times also differed significantly among specialties, even when confined to encounters for single tracer conditions. Internists consistently spent longer periods of time in patient encounters than family practitioners. While components of care delivered in patient encounters explained part of the variance in encounter time, specialty membership remained statistically significant even after components of care were included in the pertinent regression equations.

Geographic Variations

The investigation of geographic factors in physicians' service delivery sought to determine the impact of several spatial dimensions: practice in SMSAs, practice in Health Manpower Shortage Areas, and practice in any of four major regions in the United States. In multiple regression equations, region played the most important part in determining practice patterns and productivity. Physicians in the West tended to spend more time per average patient encounter, yet deliver fewer components of care, and to see fewer patients per week than practitioners in other regions. The statistical significance of region remained even in regression equations including all control variables used in the foregoing practice pattern analysis.

SMSA practice also had significant effects on medical activity. In general, physicians within SMSAs gave more tests, took more time, and prescribed fewer systemic drugs during encounters with patients than physicians outside SMSAs. Again, this relation remained after a large number of patient and physician variables had explained all they could.

This phase of the investigation produced several other noteworthy findings. First, while geographic variables had significant effects on practice patterns, these variables did not reduce the significance of specialty membership in equations predicting components of care. Specialty, furthermore, interacted with geographic variables to produce highly complex patterns of service delivery. Second, physician practice patterns resulting from the influences felt in Health Manpower Shortage Areas seem, through limited analysis, to be of a lesser magnitude than those associated with geographic region. Finally, "environmental" variables such as physician-population ratio and infant mortality rate affected practice patterns significantly. Physicians in areas with low physician-population ratios tended to spend less time with their patients, prescribe more drugs, and order fewer tests.

Other Findings

This study payed minor attention to several special issues in physician service delivery, including the accuracy of large-scale, self-report surveys of physician activities, the role of the female physician, and practice patterns followed by emergency physicians. Major findings from these analyses are as follows:

- Large-scale surveys of medical activities tend to find similar results for items explicit in nature and easy to code, a finding which supports the validity of the research procedure.
- Female physicians provide significantly different components of care for several tracer conditions, although not according to any readily discernible pattern; they show some tendency to see fewer patients and work shorter hours than male physicians.
- Emergency physicians provide care according to an "emergency model" ordering fewer tests and prescribing fewer systemic drugs than other doctors, but ordering injections and hospitalization more frequently than others.

Conclusions

The data outlined above support a variety of conclusions associated with each segment of the research. The analysis of productivity suggests that the omission of case mix measures does not seriously bias the results of earlier investigations. The present study, though, indicates that additional aides add less to the physicians' productive capacity than was found in previous studies. The analysis of short-run labor supply adds weight to the notion that a backward-bending labor supply curve exists among physicians, a finding tentatively reported by several earlier researchers. The analysis of practice patterns reports findings similar to that of earlier work in its determination, for example, that family practitioners give fewer components of care and take less time than internists for standard tracer conditions. The research reported here, though, controls for a variety of considerations that may have explained away the apparent effects of specialty. Identifying regional and urban/rural differences in physician practice, the present study adds to and replicates earlier work. In addition, the results presented here raise the possibility that physicians in physician-poor areas and physicians with heavy case loads adjust their practice patterns to accommodate high demand for their services.

Policy Issues

Based on an interdisciplinary perspective, the research team specified four policy-related inferences from the empirical findings:

- Raising physicians' fees is likely to be ineffective in increasing the supply of services for physicians already in an area.
- Increasing the use of aides will not allow physicians to see significantly more patients.
- Office-based care can be provided at significantly lower cost to society if family practitioners are utilized rather than other specialists.
- Planning criteria for spatial allocation of health manpower should be reexamined.

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CHAPTER I

INTRODUCTION

Knowledge of the quantity and nature of health services provided by U.S. physicians is crucial in assessing and projecting the country's health manpower needs. Because medical education and physician services are organized according to specialty, an understanding of practice patterns within and among specialties is essential to health manpower analysis. This report aims at improving the ability of planners and educators to provide for the public's future needs by adding to their understanding of the part various specialties play in treating the nation's health problems, the factors which affect the specialist's tendency to provide specific services, and influences which determine the practitioner's tendency to treat more patients and devote more hours to his or her practice. The study reported here is an interspecialty analysis based on two large data sets. Its objective is to assist the Graduate Medical Education National Advisory Committee (GMENAC), bodies which may succeed GMENAC, and other agencies concerned with health manpower planning and policy in making decisions on the present and future supply and requirements for physicians and on the content of medical curricula.

Information on the interspecialty differences in the delivery of health care services has until recently been quite sketchy and tentative. Health services researchers have expended much effort exploring economic, social-structural, and geographic factors which affect the availability of health care to the public. Availability of adequate data has limited many of these research efforts. Investigators have usually restricted their perspective to small numbers of observations or, where relatively extensive data sets exist, to small numbers of data elements per observation. Typically, the larger-scale surveys of physician activity have lacked estimations of reliability and validity beyond the simple comparison of those who respond with the sample source to provide indications of response bias.

The present study attempts to provide more detailed and definitive information on the basis of two recently assembled data sets. The first of these data sets was compiled by the University of Southern California (USC)/Medical Activities and Manpower Projects under the direction of Robert C. Mendenhall. The USC survey requested physicians in twenty-four specialties to furnish (1) information on the number of patients they saw or talked with by telephone each day during a specified week, (2) a diary of their activities in 15-minute segments for three specified days during the study week, (3) descriptions of each of their telephone and face-to-face encounters with patients during the same three days, and (4) information on their backgrounds, training, and practice characteristics.

Selecting six specialties for analysis, the research team combined the USC data with information from the Bureau of Health Professions' Area Resource File (ARF), a data base containing a vast array of secondary data on manpower, population, epidemiology, and economic conditions for nearly every county in the United States. The combined data base contained sufficient numbers of observations and data elements to approach several key issues in health care in a comprehensive manner.

A 1978 study of the validity and reliability of the USC data on three specialties (Perrin _et_ _al_.) adds an extremely valuable feature to the investigation. Few economic or social survey designs include components to demonstrate the quality of specific survey items. The investigation of reliability and validity in the USC data base has enabled researchers to concentrate on those parts of the data capable of yielding the most meaningful results.

The USC study provides data of extensive scope and great detail. Such detail is essential for exploration of central issues in health manpower. The USC surveys, for example, provide estimates of both actual hours worked during a specified period and "usual" hours worked by the respondent. Availability of both estimates allows researchers to compare alternative models of productivity and labor supply, giving more or less weight to the uncertainties of medical practice. The USC data include information on the size of group practices and partnerships, as well as the number of hours worked by aides in each practice or practice organization. Such detail allows researchers to compute "full-time equivalent" (FTE) aides associated with each individual physician. The USC study contains several items allowing researchers to assess the severity, complexity, and urgency of each case reported by the physician respondents. Data of this kind are essential for an interspecialty analysis, for it allows analysts to make adjustments for differences in the intensity of work typically encountered by different specialties. Analysts at USC and elsewhere have published several descriptive studies on the basis of these data, but have not yet carried out full-scale interspecialty comparisons.

The report to follow has several major objectives. It attempts to demonstrate the utility of the USC data base, particularly when combined with information from the ARF. It presents substantive results from a three-faceted investigation focusing on (1) factors affecting the number of hours worked and patients seen by physicians in different specialties, (2) differences in practice patterns which physicians in different specialties follow in caring for patients with similar conditions, and

(3) geographical effects on physicians' service delivery. Lastly, the report includes information on the contributions of various specialties to the treatment of several frequently encountered conditions in the United States.

Background

The questions addressed in this report emerge from the body of health services research that has developed over the past twenty years, as health care became a key issue in the United States. The literature review to follow provides only a sample of major questions asked and empirical findings presented by health service researchers. This sketch, though, indicates the principal issues that remain unresolved in physician manpower. The chapters to follow represent attempts to shed new light on these issues, using the new data base assembled from the USC and ARF files.

Economic Issues in Physician Behavior

Concern over the access of Americans to physicians' services raised the issues of physician supply and organization beginning in the 1960s. Fox (1972), for example, synthesizes a broad range of research and conceptualization by stating that the supply and organization of medical resources constitute the two main barriers to access. Expressing the prevailing belief of the time, Fein wrote in 1967 that the organization of physicians into groups and partnerships would help alleviate the physician "shortage." Concerned mainly with physician supply, Kessel stated in 1958 that high prices and imperfect access to physicians' services stemmed from restrictions on the production of doctors by the medical profession itself.

By the 1970s, though, economists began to question the notion of physician shortage, or, at least, to view the issue of scarcity in a more complex manner. Feldstein (1970), for instance, presented evidence that physician labor supply, conceived as the number of hours physicians were able and willing to supply to the market, followed a "backward bending" curve. Under one interpretation of this concept, physicians would set a "target income," working only the number of hours necessary to achieve their income goals. Higher prices for services would then reduce hours worked, as would an increase in the number of physicians providing patient care. Researchers also raised questions about the utility of group practice, suggesting that physicians in group practice were no more productive than those practicing alone (Bailey, 1970).

GMENAC's preliminary findings in 1980 appeared to follow this trend. GMENAC expressed concern over surplus rather than scarcity, predicting a physician oversupply of around 70,000 by 1990. Although GMENAC has recommended that U.S. medical schools train fewer physicians and fewer foreign medical graduates be allowed to practice in this country, it has paid close attention to effective utilization of a stable physician supply. Economic issues addressed in this report concentrate on determining factors which contribute to or detract from the present physician labor force's ability to provide hours of patient care to the market, and to see increased numbers of patients.

Productivity and Labor Supply

Contemporary health economics tends to concentrate on two interrelated aspects of physician productivity: first, the physician's ability to produce on the basis of "inputs," such as aides and capital stock, in addition to his or her own time, and second, the physician's willingness to work under the influence of various pricing structures.

Research on inputs has focused on factors that appear to affect productivity in a positive manner, the employment of aides and practice in group settings. Studies of the willingness to work have concentrated on estimating standard labor supply functions, highlighting the response of physicians to increased wages. Inquiries have concentrated on the question of whether physicians will supply more hours in response to greater remuneration. These investigations have provided some evidence of a backward-bending short run response, in which physicians work fewer hours in response to higher prices for their services.

Productivity. The work of Reinhardt (1972, 1975), the first major analysis of physician productivity, was directed toward the question of the optimal employment of aides. He estimated "transcendental-exponential" production functions for several specialties using data from the 1965-6 Medical Economics Continuing Surveys. He found that ". . . the average practice could. . . have profitably employed close to four aides per physician or twice the observed sample average" (1972, p. 64). This result held for all five of the specialties he studied and for a variety of measures of output--total patient visits per week, office visits per week, and patient billings. The other primary production inputs, physician hours and capital services, had the expected positive effect on output but with some decreasing returns to a greater input of physician time. A physician's output was greater, he also found, in group practice, in areas with fewer physicians, and when more of the visits were to hospital patients. Reinhardt's results, naturally, raise the issue of why physicians persist in unproductive modes of operation. Are there substantial psychic costs to employing more aides? Or are physicians just ignorant of potential benefits? These important questions have yet to be answered in the literature.

Reinhardt's provocative finding that physicians in groups are more productive has led to further theoretical and empirical work. Newhouse (1973) and Sloan (1974) have emphasized that while group practice may take advantage of the sharing of inputs, as group size increases, the individual incentives of cost control are diminished. Subsequent research has confirmed the importance of these countervailing effects. Kimbell and Lorant (1977) estimated Cobb-Douglas production functions for several medical specialties in order to measure returns to scale. They used data from two 1971 cross-sectional surveys conducted by the AMA, the Seventh Periodic Survey of Physicians and the Survey of Medical Groups. Estimates were made for two distinct types of practices: small single-specialty practices (solo or small groups) and large multi-specialty groups. As expected, they found economies of scale for the single-specialty practices, but diseconomies for the very large groups.

Labor Supply. Theory suggests that the observed hours of work of physicians are the outcome of a decision about balancing benefits of work (both income and nonpecuniary factors) against the benefits of leisure. Within limits, one expects the hours supplied to work to vary directly with the rewards from working. In the case of physicians, however, where both hours and rewards are at relatively high levels and where the marginal reward is less than the average because of diminishing returns to work and high tax rates, the incentives for further work are greatly attenuated. Whether physicians have reached a point at which greater remuneration leads to fewer hours supplied (i.e., negatively-sloped or backward-bending labor supply) is an important question for policy, especially as related to medical education.

In general, the empirical results on physician hours worked are mixed. Using data from the 1960 Census, Sloan (1973) found a positive response of weeks worked to weekly wage and a negative, but insignificant, response of weekly hours to hourly wage. Accepting his point estimates, however, the net effect of a 12 percent increase in the hourly wage is to reduce annual hours worked by about 49 hours, slightly less than a workweek. Sloan (1975) replicated this work on 1970 Census data and found roughly the same: a positive, significant effect of weekly wage on weeks worked and an inconsistent or insignificant effect of hourly wage on hours per week. Other factors that Sloan found to be significant determinants of labor supply and that are available in the USC data include physician's age, sex of physician, and the physician-population ratio.

Vahovich (1977) estimated hours and weeks equations like Sloan's using the AMA's 1971 Periodic Survey of Physicians. Separate equations were estimated for surgeons, internists, and general practitioners along with estimates pooling these groups. In the pooled equations, he found support for the hypothesis that many physicians' wages are so high that a further increase in hourly wages results in fewer hours worked per week. Moreover, estimates within specialties yielded the same result for both hours per week and weeks per year.

Unresolved issues. While the suggestion that more aides and larger practices can enhance productivity are important, a number of equally important questions remain unanswered. Economists know that physician hours contribute significantly to weekly productivity, but have little understanding of the factors underlying either within-specialty variation in hours worked or across-specialty variation. Economists may hypothesize that cross-specialty differences in hours worked and productivity are related to differences in the nature of the product produced by each physician. But, they still do not know the features of the product that explain these differences. The effects of market characteristics on individual physician performance, either across or within specialties, are not fully understood. Thus, there remains much to be learned about the relationship between hours worked and patients seen. Quantification of the characteristics of the product provided by physicians in different specialties can help lay a groundwork for using comparisons among specialties to understand physician productivity. The data examined in this report permit such quantification, and allow for the reexamination of issues whose current status in the economic literature is based on surveys over a decade old.

Practice Patterns among Physicians

Patterns of care provided by physicians in different specialties are closely related to productivity. Determining the relation between the hours a physician works and the number of patients he or she is able to see requires a concrete understanding of services rendered in each visit. An interspecialty comparison of productivity requires comprehension of the manner in which visits to physicians in different specialties by patients with the same condition vary. Assessment of cost effectiveness in medical care requires knowledge of the resources employed for specific conditions, particularly diagnostic and therapeutic procedures and time spent with the patient.

Beyond these analytical issues, the use of specific diagnostic and therapeutic techniques directly affects the cost and quality of care. Researchers have raised the possibility that inappropriate surgery, abuse of X-ray and laboratory procedures, incorrect prescription of drugs, and omission of standard diagnostic and therapeutic measures for specific diseases endanger the patient and prove costly for society. Variables which may account for relevant differences among physicians in the provision of such services include case mix, case load, availability of consultants and ancillary services, specialty training, quality of training, recency of education, practice arrangements, reimbursement levels and mechanisms, and numerous other provider characteristics. Controlling for these factors in order to determine the influence of only one or more of such highly interrelated variables has not been achieved to date primarily because of insufficient numbers of physicians in available studies.

Kessner and Kalk (1973) studied how the care for certain conditions ("tracer" conditions such as otitis media, and hypertension) might be different in both process (steps taken to diagnose or treat an illness) and outcome (degree of achievement of intended therapeutic result) under different circumstances (e.g., socioeconomic circumstances of patients, practice arrangements of providers, specialty). Significant differences in the quality of care were observed, but the authors acknowledge there was insufficient control of intervening factors to identify the causes of these differences.

Reidel and Reidel (1979) have identified differences in the approach to the care of patients with hypertension taken by general internists. Moreover, they offer some evidence that those practitioners further removed in time from their education perform less satisfactorily against generally accepted criteria. In making this assessment, Reidel and Reidel used criteria set by members of the physician community in which they performed their research. Their study controlled for such confounding factors as case load (total patient volume) and availability of support services such as laboratories and X-ray equipment.

The findings of Reidel and Reidel about differences in treatment patterns among specialists in different fields are similar to those reported from studies within single specialties. Daniels and Schroeder (1977) surveyed the use of laboratory services by general internists caring for patients with hypertension. They report differences in the use of these services unrelated to the control of the disease or the physician's productivity.

The most recent studies of practice patterns among physicians with different specialties have compared resources used by primary care practitioners in family practice and general internal medicine. Noren _et al_. (1980) report major differences in the resources used by members of these two specialties in treating nineteen separate complaints. They report that, in general, internists utilize more resources such as ti and diagnostic procedures than family or general practitioners in encounters for the same complaints. The authors raise the issue of appropriateness of procedures, in view of the consistent differences between family practitioners and internists. They base their findings on the National Ambulatory Medical Care Survey (NAMCS), a large-scale survey of physician's activities of nationwide scope.

Board certification of practitioners has also served as a focus for several recent studies. Some investigations have concluded that board certified physicians render better care for patients with diseases in the domains of their respective specialties. But the data are far from conclusive. Indeed, Payne (1976) posits, after examination of data from an extensive study of physicians in Hawaii, that physicians deliver better care for those diseases that they were specifically trained to treat, irrespective of board certification.

The study of differences in treatment of specific tracer conditions, then, consistently provides evidence that specialty training and certification help determine patterns of care. Before policymakers can draw inferences from these observations, however, they must consider several limitations on research conducted thus far. First, presenting conditions, even within a single tracer, can vary widely. No study conducted thus far has controlled for differences among cases completely enough to rule out the possibility that different specialties see different types of patients, and that observed differences in patterns of care merely reflect differences in the problems encountered. Second, most of these earlier studies have not systematically controlled for organizational and environmental factors. The classical work of health services research and medical sociology suggest that these factors should be key determinants of physician behavior. In his study of general practitioners in North Carolina, Peterson (1956) found little relation between professional education and technical performance beyond the first years of practice. Clute (1973) reports similar findings in his study of Canadian physicians. Summarizing a large body of research, Freidson (1970) argues that education is less important than environment in determining performance.

While policymakers are quite interested, then, in practice patterns, they have little definitive information on them at present. The most basic questions concern the relative contributions of presenting conditions, practice arrangement, practitioner characteristics, training, and specialty in determining components of care provided. Because of its access to large numbers of patient encounter records with several variables related to presenting condition, the research reported here has been able to control along several dimensions for interspecialty differences in types of cases encountered. Because of its access to practice and county-based data among a large number of physicians, the present study is also able to weigh the influence of organizational and environmental variables against that of specialty membership. In this way, the study reported here should provide improved understanding of the parts played by several determinants of practice patterns.

Geographic Distribution of Health Care Services

Geographic factors are the most important "environmental" influences on physician behavior according to many. Lack of sufficient access to physicians among residents of rural areas is a major policy issue. Concern over the effects of the geographic distribution of primary care and other physician specialty groupings has been expressed for decades, and is now voiced with increasing frequency (Committee on the Costs of Medical Care, 1932; Bane, 1959; Navarro, 1974; Miller, Miller, and Adelman, 1978). Large differentials in physician manpower between regions and between metropolitan and rural areas within regions have persisted and increased despite significant increases in physician numbers and attempts to influence, indirectly and directly, physician locational decisions. Recent Federal legislation such as the National Health Planning and Resources Development Act of 1974 (PL93-641) and the Health Professions Educational Assistance Act of 1976 (PL94-484) have emphasized the importance of differential physician numbers across areas of the U.S. But studies of geographic factors in physicians' services have thus far reached few, if any, definite conclusions about variation in services delivered. Most existing investigations have attempted to describe physician distribution or have attempted to ascertain the determinants of physician location (Eisenberg and Cantwell, 1975; Anderson and Marshall, 1974). Other research on a smaller scale has dealt with population proximity to and utilization of physicians (Shannon and Dever, 1974). National data which allow detailed geographic analysis of physician specialty patterns of care and workload and associated specialty mix interactions have just not been available.

Some studies such as the Study on Surgical Services for the United States (SOSSUS) provide inter- and intraspecialty data in regional perspective, but not in sufficient detail for meaningful national analysis (American College of Surgeons and American Surgical Association, 1975). Because the SOSSUS area data were gathered from four unspecified locations, results cannot be readily generalized to the Nation or be considered in relation to local variables. SOSSUS does, however, lend support to the expectation that there are significant regional variations in physician performance. Other sources on aspects of physician care, such as hospital length of stay, are also supportive of such expectations (Hartman and Watts, 1978).

The uncertainty about actual effects of physician distribution on patterns of care or the availability of services has led some researchers to question the Federal Government's system for designating health manpower shortage areas. Lee (1979), for example, cautions policymakers not to equate relatively low physician-to-population ratios with high levels of unmet need. Kehrer (1979) cites evidence indicating that while physicians may be relatively scarce in rural counties of the United States, they make up for their scarcity by working more hours and attaining higher levels of productivity than their colleagues in adequately served places. Recent changes in physician distribution patterns further complicate the task of determining differences in physician behavior according to geographical surroundings. As Schwartz et al. (1980) report, the representation of board certified specialists in non-urban parts of the United States has increased markedly since 1960.

An understanding of differences in the productivity and patterns of care among physicians--within as well as across specialty--associated with area characteristics is essential if advised planning decisions are to be made. For instance, planning relative to the location and number of residencies in various specialties and design of the medical training of physicians depend in part on an understanding of physician inter- and intraspecialty spatial variations in performance. It is clear that within any planning scheme to estimate the number and types of physicians desired or needed for future demand, attention should be given to the effects different professional and environmental milieus have on physician workloads and processes of care. The study reported here, because of the detailed geographical information it employs, provides new insights into these effects.

Outline of Chapters and Appendices

This report consists of six chapters and five appendices. Chapter I has provided background material on several key issues in the delivery of physician's services and specified the questions to be explored with the aid of the USC and ARF data sets. Chapter II describes the data sets themselves, describing principal features of their compilation, noting difficulties in their application to concrete research questions, explaining procedures formulated by the research team to compensate for these difficulties. To aid readers in understanding the value of research contributions based on the USC data, Chapter II includes a systematic comparison of the USC data base with those compiled from other large-scale studies of medical activities.

Chapter III reports on the economic questions explored in the present study, specifically, the determinants of physician productivity and labor supply. This analysis borrows much from earlier studies in health manpower, estimating regression equations of a functional form quite similar to those used by Reinhardt (1972). The analysis in Chapter III, though, departs from earlier studies by comparing productivity and labor supply across specialties. To help compensate for differences in the "products" offered by each specialty, Chapter III includes measures of case mix and encounter time in its regression models. Earlier studies have refrained from interspecialty comparisons in productivity--measured in terms of the number of patients seen--in part because they lacked data allowing such adjustments.

Chapter IV compares practice patterns among five physician specialties. Practice patterns include two variables, components of care, or the diagnostic, therapeutic, and other services rendered by physicians during their encounters with patients, and encounter time. Chapter IV compares practice patterns visible in encounters for seven tracer conditions: essential benign hypertension, ischemic heart disease, asthma, tonsillitis and pharyngitis, colds and acute nasopharyngitis, lower back pain, and pneumonia. This chapter makes extensive use of multiple regression analysis to determine whether practice pattern differences are explained away by differences among specialties in predominant patient characteristics, practice organization types, and personal characteristics of physicians.

Chapter V presents an analysis of geographical effects on both practice patterns and productivity. Consistent with several basic issues in health policy, this chapter focuses on the effects of urbanism, region, and Health Manpower Shortage Area designation on medical activities. In addition, Chapter IV considers "environmental" factors such as physicians per population and infant mortality rate in its analysis of medical activities. These factors are often correlated with strictly spatial dimensions, and could account for apparent differences between urban and rural places and among regions. As in Chapter IV, the analysis in Chapter V relies heavily on multiple regression analysis to hold constant a series of potentially confounding variables.

Chapter VI summarizes findings in the preceding chapters, draws general conclusions, and specifies a series of policy implications. This chapter attempts to synthesize results from all chapters into general statements about medical activities in the United States today. Policy implications in this chapter emerge from extensive discussion of empirical results by the interdisciplinary team of researchers which carried out the project.

A series of five appendices follows these chapters, adding material to help explain and extend analyses presented in the major parts of this analysis, and providing findings from several small-scale but potentially important analytical tasks. Appendix I contains an analysis of data especially relevant to the work of GMENAC and similar bodies. This appendix presents findings on the distribution of responsibility for patient care in several tracer conditions among all twenty-four specialties surveyed by USC. The tables in this series compare USC data with NAMCS estimates, offering information on the reliability and validity of both studies. Appendix I also contains a table comparing USC and NAMCS data on several other dimensions. The judgments about the validity of NAMCS that can be gained from these tables are important in that they shed light on the accuracy of information given to the GMENAC Delphi panels for use in estimating future physician manpower needs.

Appendix II contains analyses of productivity and practice patterns among emergency physicians, and differences on these two dimensions according to physician gender. These small-scale analyses are both important to health manpower policy, emergency physicians playing an important role in ambulatory care delivery, and female physicians playing a pioneering role in the occupation by women of traditionally male professional roles. Because these areas require different research methodologies than other issues considered in this report, they are placed in a special appendix instead of integrated into the earlier chapters.

Appendices Three through Five contain detailed data which complement data presented in the bodies of similarly numbered chapters. Appendix III includes tables detailing physician case mix data, as well as alternative models of productivity and labor supply. Appendix IV contains regression results on patient encounter data not included in the body of Chapter IV, as well as a detailed series of contingency tables on physician-patient encounters among restricted patient populations. Appendix V contains a series of tables of regression results, again calculated on the basis of visits of types not included in the body of Chapter V, as well as contingency tables showing interactions among specialty, region, and urban status. While the contingency tables presented in Appendices IV and V are quite extensive, the research team chose to include them in this report to provide future researchers with data on medical activities more detailed than perhaps any other published presentation.

The substantive areas discussed in this introduction reflect major policy concerns in the contemporary United States. Clearly, findings related to these issues should receive no weight beyond that warranted by the data on which they are based. To help specify the confidence readers may have in the findings to follow, this report first turns to a systematic exploration of properties and problems in the relevant data sets.

Chapter References

American College of Surgeons and American Surgical Association. 1975. Surgery in the United States: A Summary Report of the Study on Surgical Services for the United States. Baltimore: American College of Surgeons and American Surgical Association.

Anderson, J. G. and H. H. Marshall. 1974. "The Structural Approach to Physician Distribution: A Critical Evaluation." Health Services Research 9(Fall):195-207.

Bailey, R. M. 1970. "Economies of Scale in Medical Practice." In H. E. Klarman (ed.) Empirical Studies in Health Economics. Baltimore: Johns Hopkins University Press.

Bane, F. 1959. Physicians for a Growing America. Report of the Surgeon General's Consultant Group on Medical Education. Washington, D.C.: U.S. Government Printing Office.

Clute, K. F. 1963. The General Practitioner, A Study of Medical Education and Practice in Ontario and Nova Scotia. Toronto: University of Toronto Press.

Committee on the Costs of Medical Care. 1932. Medical Care for the American People. Final report of CCMC (reprinted, Washington, D.C.: DHEW., 1970).

Daniels, M. and S. A. Schroeder. 1977. "Variation Among Physicians in Use of Laboratory Tests: II. Relation to Clinical Productivity and Outcomes of Care." Medical Care 15:482-497.

Eisenberg, B. S. and J. R. Cantwell. 1976. "Policies to Influence the Spatial Distribution of Physicians: A Conceptual Review of Selected Programs and Empirical Evidence." Medical Care 14(June):455-468.

Fein, R. 1967. The Doctor Shortage: An Economic Diagnosis. Washington, D.C.: Brookings Institution.

Feldstein, M. S. 1970. "The Rising Price of Physicians' Services." Review of Economics and Statistics. 52 (May):121-133.

Fox, P. D. 1972. "Access to Medical Care to the Poor: The Federal Perspective." Medical Care 10 (May-June):272-277.

Freidson, E. 1970. Profession of Medicine. New York: Dodd, Mead & Co., Inc.

Graduate Medical Education National Advisory Committee. 1980. Report of the Graduate Medical Education National Advisory Committee to the Secretary, Department of Health and Human Services. Washington, D.C.: DHHS.

Hartman, R. and C. Watts. 1978. "The Determination of Average Hospital Length of Stay: An Economic Approach." Quarterly Review of Economics and Business 18:83-96.

Health Services Research Group, University of Wisconsin. 1975. "Development of tne Index of Medical Underservice." Health Services Research 10(Summer):168-180.

Kehrer, B. H. 1979. "Health Policy and Physician Behavior." The MPR Policy Newsletter. 1 (Spring):6-10.

Kessel, R. A. 1958. "Price Discrimination in Medicine." Journal of Law and Economics (October):20-53.

Kessner, D. M. and C. E. Kalk. 1973. "A Strategy for Evaluating Health Services." Controls in Health Status Vol. 2. Washington, DC: National Academy of Sciences.

Kimbell, L. J. and J. H. Lorant. 1977. "Physician Productivity and Returns to Scale." Health Services Research (Winter):367-379.

Kleinman, S. C. and R. W. Wilson. 1977. "Are 'Medically Underserved Areas' Medically Underserved?" Health Services Research 12(Summer):147-162.

Lee, R. C. 1979. "Designation of Health Manpower Shortage Areas for Use by Public Health Service Programs." Public Health Reports. 94 (1979):48-59.

Miller, A. E., M. G. Miller and J. Adelman. 1978. "The Changing Urban-Suburban Distribution of Medical Practice in Large American Metropolitan Areas." Medical Care 16(October):790-818.

Navarro, V. 1974. "A Critique of the Present and Proposed Strategies for Redistributing Resources in the Health Sector and a Discussion of Alternatives." Medical Care 12(September):721-742.

Newhouse, J.D. 1973. "The Economics of Group Practice." J. Human Resources 8(Winter):37-56.

Noren, J., Frazier, T., Altman, I., DeLozier, J. 1980. "Ambulatory Medical Care: A Comparison of Internists and Family-General Practitioners." N.E. J. Med. 302:11-16.

Payne, B. C. 1976. The Quality of Medical Care: Evaluation and Development. Chicago: Hospital Research and Educational Trust.

Perrin, E. B., E. B. Harkins and M. M. Marini. 1978. Evaluation of the Reliability and Validity of Data Collection in the USC Medical Activities and Manpower Projects, Final Report. Seattle: Battelle Health and Population Study Center.

Peterson, O. L. 1956. An Analytical Study of North Carolina General Practice, 1953-1954. Evanston, IL: American Association of Medical Colleges.

Reinhardt, U. 1972. "A Production Function for Physician Services." Review of Economics and Statistics, Vol. 54, 1(February):55-66.

Reinhardt, U. 1975. Physician Productivity and the Demand for Health Manpower. Cambridge, MA: Ballinger Publishing Company.

Reidel, R. L. and D. C. Reidel. 1979. Practice and Performance: An Assessment of Ambulatory Care. Ann Arbor: Health Administration Press, University of Michigan.

Schwartz, W. B., Newhouse, J. P., Bennett, B. W., Williams, A. P. 1980. "The Changing Geographic Distribution of Board-Certified Physicians." N.E. J. Med. 303:1032-8.

Shannon, G. W. and G. E. A. Dever. 1974. Health Care Delivery Spatial Perspectives. New York: McGraw-Hill Book Company.

Sloan, F. A. 1973. "A Microanalysis of Physicians' Hours of Work Decisions." M. Perlman (ed.), The Economics of Health and Medical Care. New York: John Wiley and Sons.

Sloan, F. A. 1974. "Effects of Incentives on Physician Performance." In J. Rafferty (ed.) Health Manpower and Productivity. Lexington, MA: DC Health

Sloan, F. A. 1975. "Physician Supply Behavior in the Short Run." Industrial and Labor Relations Review, Vol. 28, 4(July).

U.S. Bureau of the Census. 1977. Census of Retail Trade. Washington, D.C.: U.S. Government Printing Office.

Vahovich, S. G. 1977. "Physicians' Supply Decisions by Specialty: 2SLS Model." Industrial Relations, Vol. 16 1(February):51-60.

CHAPTER II

DATA ON PHYSICIAN SERVICES

Any data set of the size and complexity needed for the current project would present problems for the user. Many difficulties arise from the aims of the study itself, which require large amounts of highly specific data from many sampling units. The need to collect data of this specificity and volume presents researchers with difficult decisions in survey design and execution, as well as management of the completed data set. This chapter discusses issues which arose in the research team's use of data required for the interspecialty analysis. It examines data collection methods and strategies, as well as decisions made by the research team in managing and analyzing the resulting data files. These issues and decisions bear strongly on the confidence readers may place on substantive findings presented later in this report.

The research team assembled working files by combining data from the USC and ARF data bases. The team arranged the ARF and USC files in a manner permitting the computation of statistics based on information furnished by individual physician respondents in the USC survey and ARF data on the counties in which they live.

While a valuable resource, the ARF has several limitations. Items on the adequacy of health manpower in specific counties presented an important problem. The ARF notes whether the county has been designated a health manpower shortage area by local and Federal agencies. But because availability of health manpower often varies within counties--for example, between urban and rural parts of the same county--researchers could not easily determine whether physicians in "designated" counties actually practiced in shortage areas.

The research team encountered dilemmas with the USC survey data as well. Most of the earlier research efforts with these data have been descriptive in nature rather than aimed at testing hypotheses about health services delivery. Part of the present study's objective was to determine the range of questions which the USC data could help answer. The following discussion addresses issues arising from both the survey design and management of the resulting data set which affect the study's usability by future researchers. Readers should bear in mind that, despite various difficulties, the research team ultimately concluded that the USC data could furnish usable findings on a variety of issues. While the sections below entitled "Survey Procedure" and "Data Management Problems," provide details of difficulties with the data set, the section entitled "Usability of the Data" (below) indicates several methods the research team used to compensate for these problems.

Survey Procedure

Sampling

A basic issue in the USC survey design concerned the selection of physicians and physician-patient encounters. Interspecialty analysis requires that physicians selected for each specialty file truly represented that specialty, and physician-patient encounters truly reflected the specialty's activities. An adequate interspecialty analysis, then, required an acceptable design for sampling both types of observation units.

Specialty Classification. The first problem researchers encountered concerned the specialty of the physician respondent. USC used the American Medical Association's Physician Masterfile as its sampling frame, sampling individuals within each specialty in five strata according to practice arrangement. For purposes of assembling the Masterfile, the AMA designates each physician's specialty as the field he or she denotes as "primary" in its triennial census of the medical profession.

Specialty classification presented several problems for analysis. Some researchers have questioned use of the AMA's classification of physician specialties for manpower studies. Epstein and Henke (1979), for example, write that the AMA Masterfile for 1976 included 645 rheumatologists, while their survey of the American Rheumatism Association's membership identified 1,258 physicians who devoted at least 50 percent of their time to rheumatology (1979). Organizations representing other fields, such as the American College of Emergency Physicians, have also commented that the AMA's method of classification does not represent their specialties adequately.

Early findings from Battelle's analysis add arguments that the AMA's designation of specialty should not be used without modification. The USC data collection instrument requested each respondent to designate his or her "primary specialty" in a manner nearly identical to the AMA data form. Responses to the USC item on primary specialty differed from responses to the AMA counterpart in between 5 to 10 percent of the cases examined. Physicians adjudged to have changed specialty were deleted from the analyses.

Difficulties with the AMA Masterfile, though, must be weighed against possible alternative sources of respondents. Despite its problems, the Masterfile is the only comprehensive, computer-based roster of practicing physicians in the United States, arranged in a standardized format according to specialty. As Adams and Mendenhall (1974) note, an interspecialty analysis of the type reported here requires a sampling frame with just such an orderly partitioning of specialties. While the Masterfile is sometimes incomplete in its inclusion of younger physicians and imprecise in the classification of residents, it is a generally precise and nearly exhaustive representation of the universe examined in this study. A detailed investigation of physicians in the State of Washington, for example, indicates a very high level of completeness in the Masterfile's coverage of eligible physicians, and high reliability on several items on type of practice (Cherkin and Lawrence, 1977).

Patient Encounter Data. Selection of physicians represented the first stage of an essentially two-stage sampling design. The second stage consisted of the selection of physician-patient encounters. The USC instrument requested each physician respondent to record characteristics of encounters with all patients seen in a predetermined three-day period. Records of patient encounters provided information on differences in case mix among various specialties and variations in patterns of care provided by members of different specialties for similar conditions.

A major problem for comparing encounters was the comparability of cases seen by each specialty. A particular disease, for example, may vary in form from case to case. Due to the differences in skills and training across specialties, physicians in one field may typically encounter essentially different cases from physicians in another, even within the same type of presenting condition. In this way, internists may regularly encounter more complex cases of hypertension than family practitioners. In recognition of this possibility, the USC study design called for estimates of complexity, severity, and urgency in all patient encounter records. Estimates of this kind, of course, are necessarily imprecise, as physicians accustomed to treating relatively complex and severe cases are likely to consider as simple and routine cases other physicians would consider especially difficult.

Timing of USC's surveys of different specialties raised a second set of issues. USC surveyed various specialties during different time periods between 1976 and 1978. Table II-1 summarizes the time periods during which data were collected for the specialties under consideration here. The diversity of time periods which this table illustrates complicates the task of interspecialty analysis. Case mix in any specialty may vary from season to season. Records compiled by members of different specialties at different times of the year, then, may confound differences resulting from specialty membership and seasonal variation.

The Data Collection Instrument

A second set of problems with the USC data set resulted from the design of the data collection instrument itself. For all specialties surveyed, the USC data collection instrument consisted of six distinct components: a week's practice summary, an activity overview, a record of telephone encounters in log diary form, a log diary of face-to-face patient encounters, a questionnaire on teaching and research activities, and a questionnaire on personal practice characteristics. Each component should be viewed as a separate survey, involving its distinct strengths and weaknesses.

The study reported here utilized only data from three portions of the research instrument, the week's practice summary, the log diary on face-to-face encounters with patients, and the questionnaire on personal and practice characteristics. The week's practice summary consisted of a form on which physicians were requested to indicate each patient seen by

TABLE II-1

SCHEDULE OF DATA COLLECTION FOR SIX SPECIALTIES IN USC SURVEY

	Data Collection Period	
Specialty	Year	Month(s)
General Internal Medicine	1976	February, March
Cardiology	1976	December
Family Practice	1977	October
Pediatrics	1977	November, December
Emergency Medicine	1978	May
Orthopedic Surgery	1978	July

slashes in a box representing activity for a day in the study week; the log diary requested respondents to record characteristics of encounters with patients on successive lines of a grid; the questionnaire included both open and closed ended items in a form appropriate for self-administration. While the week's practice summary and questionnaire were identical (or nearly so) for each specialty surveyed and contained explicit items, the wording of questionnaire items and differences in log diary items presented to different specialties produced problems for the analysis. The issues of reliability and validity were raised for the analysis of data from all three components of the research instrument.

Wording of Items. The phrasing of items in the questionnaire limited range of questions answerable in the interspecialty analysis. Several items in the questionnaire seemed unlikely to elicit sufficiently detailed responses for analytical purposes. Physicians, for example, were asked to record the number of physician personnel employed at their principal office. It was often unclear from their responses whether respondent physicians did or did not include themselves in the reported number.

Differences Among Specialties. Response options presented to physicians in the log diary to determine diagnostic and therapeutic activities usually differed from specialty to specialty. Comparison of items designed to monitor counseling illustrates these differences. While internists were given the option of selecting either "Growth/Development," "Family/Social/Sexual," "Patient Education," "Therapeutic Listening," or "Treatment Program," under the rubric of "counseling," orthopedic surgeons could chose only "Counseling/Advice" to express this broad range of activities. USC researchers allowed these response options to vary deliberately to reflect known differences in case mix and usual components of care from specialty to specialty. But differences in items prevented researchers in the investigation reported here from making some potentially useful comparisons. Researchers, for example, were unable to compare the frequency with which family practitioners, internists, and emergency physicians ordered pulmonary function tests in the treatment of asthma.

Reliability and Validity. The evaluation performed by Battelle of the reliability and validity of USC data instrument, as applied to family practitioners, general practitioners, and pediatrics, identified problems with specific items. A detailed report of this study's findings has been published by Perrin, Harkins, and Marini (1978). Findings of the reliability study most immediately useful to the interspecialty analysis concerned the degree to which individual physicians responded similarly to items appearing in the USC survey and a Battelle survey, administered for the purpose of establishing reliability, at a later date. The Battelle study presented four types of summary statistics to indicate "test-retest" reliability for specific items: kappa, index of reliability, Spearman correlation coefficient, and percentage agreement. Table II-2 provides a summary of the reliability study's findings. The research team selected variables for analysis in the light of the findings on reliability and validity. The item indicating the physician's role as a provider or assistant in caring for an individual patient, for example, was omitted from the analysis because its reliability was low according to the Battelle study.

Survey Response Patterns

A key issue in the reception of any survey research enterprise is the type of response it receives from the survey population. Two related

TABLE II-2

RELIABILITY OF SELECTED USC SURVEY ITEMS ACCORDING TO BATTELLE-HARC EVALUATION

Item(s)	Reliability Indices			Comments
	Kappa	Proportion of Agreement	Spearman Coefficients	
PHYSICIAN PROFILE				
From Questionnaire:				
Primary specialty	.73			
Primary practice arrangement	.65			
Primary practice arrangement	.71			group and partnership categories combined
Locations where patients are seen				only "nursing home" location has kappa of .75
Office	.35	.96		
OPD	.24	.76		
Clinic	.23	.77		
Hospital	.35	.88		
ER	.19	.65		
Nursing Home	.75	.87		
Industry/School	.47	.90		
Home	-.01	.84		
Other				
Office staff (all)			.03-.82	all data accepted if one cell checked
Office staff (lab/X-ray, technicians, RNs)			.58-.84	
Office staff (all except "other")			.60-.82	only rows accepted with at least one entry
Office staff (non-physician personnel collapsed)			.70-.71	
From Log Diary:				
Outpatients seen			.80-.91	series highly reliable

TABLE II-2 (continued)

RELIABILITY OF SELECTED USC SURVEY ITEMS ACCORDING TO BATTELLE-HARC EVALUATION

Item(s)	Reliability Indices			Comments
	Kappa	Proportion of Agreement	Spearman Coefficients	
Hours worked			.60-.78	series moderately reliable,
PATIENT ENCOUNTER				
From Log Diary:				
Seen patient before?	.60	.93		internal validity acceptable
Regular patient	.52	.89		
Majority of care (patient)	.41	.86		
Majority of care (family)	.46	.75		
Patient source	.37	.95		low kappa results in part from highly skewed response distribution
Physician's role	.10	.96		low kappa due in part to lack of variation in variable
Care classification	.46	.84		
Diagnostic Procedures				
Routine lab	.56	.86		Low kappas partially due to lack of distribution
Blood chemistry	.26	.95		
Culture	.58	.95		
Chest X-ray	.33	.96		
Other radiology	.51	.97		
Therapeutic Procedures				
Immunizations	.64	.95		
Injections--other	.28	.83		
Patient Education	.12	.91		
Listening/Reassurance	.27	.91		

TABLE II-2 (continued)

RELIABILITY OF SELECTED USC SURVEY ITEMS ACCORDING TO BATTELLE-HARC EVALUATION

Item(s)	Reliability Indices			Comments
	Kappa	Proportion of Agreement	Spearman Coefficients	
Systemic Drugs	.32	.67		
Topical Drugs	.33	.95		
Exercise/Diet	.08	.91		
Counseling: Treatment program	.01	.90		
Next contact	.54			"None," phone, Return PRN combined
Referral/Consult	.33	.91		Infrequently used codes combined. Little difference (Battelle vs. USC) in marginals.
Diagnosis				
Hypertension (401)	.61	.96		Low kappas coinciding with high proportion of agreement illustrate the limitations of kappa as a reliability indicator for variables with highly skewed distributions (see "Usability of the Data," subsection "Selection of Items," below).
Pharyngitis (462)	.55	.96		
URI (465)	.39	.94		

N.B. As expressed in Battelle's reliability study report, kappas and Spearman coefficients of .60 and above indicate acceptable reliability.

features of this issue are (1) the rate at which those sampled respond to the survey and (2) the degree to which those who respond represent the population to which they belong. The research team considered both dimensions in planning the interspecialty analysis.

Response Rates. Among the twenty-four specialties surveyed by USC, response rates ranged from a high of 82 percent for endocrinology to a low of 34 percent for general surgery. Table II-3 shows response rates for the six specialties selected for the interspecialty analysis. At nearly 60 percent, the response rate for orthopedic surgery is not unusual among published reports in the social sciences. At 44 percent, however, the response rate for family practice raises questions about representativeness. A further caveat with regard to use of the USC data arises from the fact that those who responded to surveys often failed to complete every item on the data instrument.

Representativeness of Respondents. Response rate does not directly measure the representativeness of a survey. Very small numbers of individuals can provide valid estimates of characteristics of a population if they do not differ systematically from this population on important dimensions. To help determine the representativeness of its samples, USC compared respondents in each specialty with general characteristics of the sample of physicians in each field originally drawn from the AMA Masterfile. Results of this comparison for the six specialties under consideration here appear in Table II-4. Data on representativeness of respondents from all twenty-four specialties are available from USC.

Assuming that the five dimensions considered in Table II-4 are valid indicators of the representativeness of the respondents, three

TABLE II-3

RESPONSE RATES TO USC SURVEY FOR SIX SPECIALTIES

Specialty	Response Rate	Number of Respondents
Orthopedic Surgery	59%	420
Cardiology	57%	359
General Internal Medicine	53%	891
Pediatrics	50%	733
Emergency Medicine	46%	259
Family Practice	44%	683

TABLE II-4

SIGNIFICANT DIFFERENCES BETWEEN RESPONDENTS TO USC SURVEY AND SAMPLING FRAME ON FIVE PHYSICIAN CHARACTERISTICS

Characteristic	Family Practice	Internal Medicine	Cardiology	Pediatrics	Emergency Medicine	Orthopedic Surgery
County Population		*				
Geographical Region		*		*	*	*
Practice Arrangement				*	*	
Age			*	*		
Board Certification		*		*		

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*$p<.05$

specialties present relatively few problems: family practice, cardiology, and orthopedic surgery. Pediatrics, emergency medicine, and general internal medicine, though, differ from the specialists in the AMA file on at least two dimensions. Findings on these specialties must be viewed with appropriate caution. Readers should view comparisons among internists, pediatricians, emergency physicians, and orthopedic surgeons with the knowledge that samples of these specialties are subject to systematic bias, physicians residing in the West generally being overrepresented in them.

Data Management Problems

Problems in use of a data set can present as many barriers to success of a survey as the original research design. The research team encountered problems in its data set stemming both from the USC tapes and the attempt to merge USC data with variables from the ARF. USC personnel lent considerable expertise in helping the research team solve several data management problems, the most important of which are listed below.

Arrangement of Files. Special problems for the interspecialty analysis resulted from the arrangement of various specialty files. Files for individual specialties are not arranged in exact parallel order. The dichotomous board certification variable, for example, occurs in different tape locations for cardiology and general internal medicine. Though such deviations from parallel structure appear to be few in number, their discovery and rectification in compilation of "working files" were difficult.

Size and Complexity. Finally, the size and complexity of the USC files posed special problems for analysis. For analysis of tracer conditions, computer programs had to be written to search vast numbers of patient encounter observations for appropriate cases. In order to merge USC data with the ARF, similar searches had to be conducted to select data elements relevant to the interspecialty analysis. Relevant USC and ARF data had been identified, they were placed in parallel files through the Scientific Information Retrieval (SIR) package. This process of selection and file construction produced files specially adapted to the needs of interspecialty comparison of manageable size. While the USC files included approximately 1500 variables for each physician respondent and 300 for each patient encounter, working files contained 150 and 75, respectively. About thirty variables were selected from the 2500 per observation available in the ARF.

Usability of the Data

Despite the problems identified in the initial inspection of the USC data, the research team determined that these data could still furnish important insights into the activities of physicians in several key specialties. By referring to Battelle's reliability study of the USC data, examining other pertinent sources of information, and carefully selecting specialties, respondents, and data elements, the research team decided that the USC data could provide useful insights into key questions on physician services.

Selection of Usable Data

The research team took several steps to assure that the interspecialty investigation would include reliable and valid elements. These steps included examination of non-USC data pertinent to the USC study design, selection of the more reliable elements in the USC dataset, combining certain elements to improve reliability, and dropping doubtful observations. Collectively, these steps amounted to a trade-off which sacrificed some information in order to assure the validity of findings ultimately presented.

Selection of Specialties. Selection of specialties for analysis constituted a key feature of this exercise. The interspecialty analysis required a balancing of several factors. These included adequate response rate, representativeness of respondents, comparability of case mix, and policy relevance of specialty.

The research team decided to include family practice (FP), cardiology (CD), general internal medicine (IM), pediatrics (PD), emergency medicine (EM), and orthopedic surgery (OS) in the analysis. Although the response rate for family practice was rather low, respondents appeared quite similar to all individuals included in the sampling frame (see Table II-4). While orthopedic surgery and cardiology each differed from the AMA Masterfile membership on single dimensions, the response rates were higher than family practice. This combination of response rate and representativeness of responses appeared to warrant acceptability. The same combination appeared acceptable for general internal medicine, whose respondents differed from the AMA Masterfile on more dimensions, but whose membership responded at a higher rate. Pediatrics and emergency medicine, subjects of much discussion in health services research, responded at lower rates than internal medicine and differed from the AMA Mastefile on more dimensions. They were selected, however, because of their high relevance to important policy questions.

Each specialty selected treated a mixture of conditions that was also treated by at least one other specialty. Scientists at Battelle elected to undertake specialty comparisons only among specialties whose representatives in the dataset included at least 100 encounters of a given tracer condition, with no secondary condition recorded. Table II-5 demonstrates specialties comparable according to this criterion.

Readers of this report should take the trade-offs involved in this selection process into consideration when reviewing the study's findings. Family practice, cardiology, and orthopedic surgery present relatively few problems of representativeness. Findings related to internal medicine, emergency medicine, and pediatrics should be viewed more tentatively. Overall, the analysis has attempted to hold intervening variables constant, a procedure which should minimize the distortions caused by over- or undersampling individuals in particular geographical regions, practice arrangements, or age groups. Nevertheless, the reader must bear in mind that differences from the AMA Masterfile on multiple dimensions may signal additional, unmeasured bias in response rates.

Seasonal Variation. Because detecting differences in case mix and workload was a central feature of this study, seasonal variation in practice activity could not be allowed to interfere with appropriate comparisons. Since seasonal variation should affect numbers of patient encounters for at least some of the tracer conditions chosen for analysis, consideration for the time of year when the specialties were surveyed was important. Two chronic conditions, hypertension and ischemic heart disease, seemed unlikely to vary markedly in incidence from season to season. The fact that USC surveyed family practitioners in October and internists in February, then, should not result in faulty comparisons of care for hypertension and heart disease by these two specialties.

Acute conditions such as colds and URI, pharyngitis and tonsillitis, and pneumonia do vary significantly in incidence from season to season.

TABLE II-5

COMPARABLE TRACER CONDITIONS FOR SIX SELECTED SPECIALTIES

Tracer Condition	ICDA-8 Codes	Specialty					
		FP	IM	PD	CD	OS	EM
Hypertension	401	X	X		X		
Ischemic Heart Disease	412, 413	X	X		X		
Colds/URI	460, 465	X	X	X			X
Pharyngitis/ Tonsillitis	462, 463	X	X	X			X
Pneumonia	480-486	X	X	X			
Asthma	493	X	X	X			X
Low Back Pain	353, 725.1, 722, 728.5-728.9, 846, 847.8-847.9	X	X			X	

But the periods during which specialists were surveyed do not imply distortion of case mix or workload comparison. According to the incidence patterns for those diseases for 1975-1977, shown in Table II-6, only minor differences are detectable between periods in which pediatricians and family practitioners were surveyed (October through December) and the interval (February through March) during which internists were queried.

Selection of Items. In the light of Battelle's earlier reliability study, the research team selected items capable of forming the basis of widely acceptable findings. The Battelle report relies heavily on the statistic kappa. For an item to have acceptable reliability, the evaluation study considered a kappa above of .60 necessary.

This criterion may, however, be too restrictive for the purposes of substantive research. Kappa is an unfamiliar statistic in the survey research community. While of great value in establishing similarity of subsequent observations for continuous variables, it underestimates these associations for variables with restricted marginal distributions. This underestimation problem appears especially serious for variables with highly skewed distributions, and for dichotomous variables. Table II-2, for example, presents a kappa of .26 for the dichotomous variable indicating the use of blood chemistry as a diagnostic procedure. For this variable, the proportion of agreement between the original survey and Battelle's follow-up was .96.

The limited literature on kappa as an index of reliability contains cautions of this kind. With respect to either kappa or percentage agreement as reliability measures, Hartmann writes that "measures of trial reliability differ markedly in value when applied to the same data,

TABLE II-6

INCIDENCE OF UPPER AND OTHER RESPIRATORY CONDITIONS BY QUARTER, 1975-1977 (ACUTE CONDITIONS PER 100 PERSONS)[1]

	1975-1976				1976-1977			
	July-September,	October-December,	January-March,	April-June	July-September,	October-December,	January-March,	April-June
Upper Respiratory Conditions[2]	10.0	19.0	18.1	11.3	10.2	21.0	21.8	9.5
Other Respiratory Conditions[3]	0.9	1.9	1.8	1.4	1.0	1.8	1.9	1.2

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[1] Source: National Center for Health Statistics

[2] Includes ICDA No. 460-465, 501, 508

[3] Includes ICDA No. 466, 480-486, 510-516, 519, 783

may change appreciably in value with changes in rate of target behavior, and can provide substantially misleading estimates of the reliability of trail scores (1977:111-112)." Difficulties with kappa are especially apparent when applied to dichotomous variables in specialized populations. In the present study, for example, cardiologists are quite likely to play an "assist" role under the dichotomous choice variable, "provide-assist." Family practitioners would most likely be "providers." Taken together, responses of these two specialties would generate a high kappa reading if 90 percent of those who designated themselves "providers" or "assistants" repeated the same designation at a subsequent observation. Taken separately, however, members of these two specialties would generate a kappa of considerably lower magnitude, since the majority of each group would opt for either the provide or assist designation. In this way, responses of the same population could produce very different levels of kappa, depending on the way researchers chose to divide it before computing reliability statistics. In the present study, which divides its study population on specialty grounds, kappa must be applied with extreme caution whenever dichotomous variables or continuous variables with high degrees of skewness are encountered.

In view of this formulation, the research team scientists used proportion of agreement as the criterion for evaluating acceptability of dichotomous items. Dichotomous items were accepted for analysis if the proportion of agreement in the reliability study equaled or exceeded .90. The .60 kappa criterion for other variables was retained. The research team made several exceptions in its selection procedure, including items in the analysis somewhat below acceptable levels in instances where substantive interest was high. Examples include "next contact" (kappa = .54) and "systemic drugs" (proportion of agreement =

.67). Items for which such exceptions have been made should be viewed with caution.

Combination of Categories and Omission of Observations. In an effort to improve the quality of data to be analyzed, Battelle scientists combined selected response categories and dropped observations which appeared to involve error. Analysts, for example, combined all non-clerical office personnel rather than attempting to scrutinize different types of physician aides separately. As Table II-2 demonstrates, several aide categories fall below acceptable levels of reliability; reliability of the combined category, though, is acceptable. In estimating equations to explain labor supply and productivity, analysts dropped observations of physicians who were not office based, who specified different primary specialties in the AMA and USC surveys, or who practiced outside the United States. These two procedures will illustrate the quality-quantity tradeoff in solving an important analysis problem: by combining aide categories, the contribution of individual types of personnel (e.g., Medex) cannot be determined; by dropping the specified categories of physicians, 290 internists are lost, with comparable attrition in other specialties.

Comparison With Other Datasets

All datasets have strengths and weaknesses. Perhaps the best way to evaluate the potential contribution of a dataset in any scientific field is to compare it with other sources of information which have served as the basis for important studies. While few if any datasets are comparable to the ARF, researchers have conducted numerous investigations with goals highly similar to USC. Table II-7 compares the USC data set with several studies and widely cited in health services research. Most

TABLE II-7

COMPARISON OF LARGE-SCALE PHYSICIAN STUDIES

Characteristics	USC/MAMP	NAMCS	SOSSUS (Manpower Questionnaire)	Periodic Survey of Physicians AMA	Medical Economics	SOSSUS (Area studies)
Sample Source	AMA Masterfile	AMA Masterfile AOA Masterfile	AMA Masterfile AOA Masterfile	AMA Masterfile	AMA Masterfile	Physicians performing surgery
Specialties	Twenty-four	All except Radiology, Anesthesiology, and Pathology	Surgical	All	All	Physicians performing surgery
Physician types	All except first year medical residents	Office based, patient care, non-Federal	All except residents, (residents studied separately)	Office based, patient care, non-Federal	Office based non-Federal	Physicians performing surgery
Geographic Extent	U.S. and Puerto Rice	Contiguous U.S.	All U.S.	All U.S.	All U.S.	Four anonymous metropolitan areas
Smallest Geographic Detail for Analysis	State, Metro-nonmetro status (county with permission)	U.S. Region (4) Metro-nonmetro status	U.S. Division(9)	U.S.Division(9) Metro-nonmetro status	U.S.Region(4)	Four undesignated metropolitan areas
Period	1976-1978	Yearly	1972	Yearly	Yearly	1970
Time of Survey Administration	Selected weeks	52 weeks	Mailing and 52 weeks(log)	Mailing and follow-up	Mailing and follow-up	Population for 52 weeks
Sample unit survey period	One week,and Estimate year	One week	One Day, and Estimate year	Estimate year	Estimate year	All year
Response *	57%(34-82%)	78%(1977)	71%	49%(1978)	40%(1977)	100%
#Physicians responding	10,000	2,000 yearly	7,000	4,500	6,000 (4000 usable)	surgeries = 285,000

TABLE II-7

COMPARISON OF LARGE-SCALE PHYSICIAN STUDIES (CONTINUED)

Characteristics	USC/MAMP	NAMCS	SOSSUS (Manpower Questionnaire)	Periodic Survey of Physicians AMA	Medical Economics	SOSSUS (Area studies)
Physician's patient sampling frame	all encounters	sample of office encounters	all encounters (very limited data except on surgeries)	--	--	All surgery
#patient encounters	368,000 plus 82,000 by telephone	51,000 yearly	?(not published) surgeries=6000	--	--	surgeries 285,000
Scope of data	Practice Questionnaire Patient Log-Diary of Activities by time and count	Patient Sample Log Physician characteristics limited to type of practice arrangement & specialty.	Practice Questionnaire Patient Log-Diary(limited) Log of Activities by time	Practice Questionnaire	Practice Questionnaire	Surgical counts by limited physician characteristics
Reliability and Validity	Limited non-response bias evaluation, and limited Battelle reliability survey	Field testing, no other (?)	none(?)	Limited non-response bias evaluation	Simple comparison with universe	Population for the areas selected
Published	no/yes	no	no	yes	yes	--
Sampling Strategy	complex	complex	simple	complex	simple	Population in selected areas
Estimates to U.S. totals	Yes	Yes	Yes(simple extrapolation)	Yes(simple extrapolation)	Yes(simple extrapolation)	No

TABLE II-7

COMPARISON OF LARGE-SCALE PHYSICIAN STUDIES
(CONTINUED)

* Response rates must be compared with the knowledge that various studies use different criteria for computing them. The sample SOSSUS estimated above includes 939 responses which fell into the categories of no response (7%), other activities (44%), no medical activity (3%), retired (28%), and other (18%). NAMCS and USC eliminate most of these types of responses before a rate is calculated. Response rates for SOSSUS and USC are essentially identical (58%) when calculated according to identical criteria.

-- Indicates question not applicable

There are other national data sets which provide selected information on physician activities such as HDS, HIS, HANES, PAS, NDTI and the disease categorical surveys such as those dealing with cancer, e.g., SEER. While there is useful information within those datasets for the study of physician practice behavior, they all have serious limitations relative to the study of individual physician specialties. Some individual specialties have done detailed studies of their own. Such studies, however, often have special purposes that limit their use in broader contexts. For instance, a recent study by the American Academy of Orthopedic Surgeons only surveys board certified orthopedic surgeons.

data bases appearing in the table utilize the same sampling frame and cover the same geographical area. The USC study suffers from a lower overall response rate than NAMCS; it is cross-sectional rather than longitudinal; it samples practice activity over selected, single weeks rather than 52-week time periods. The USC survey, though, possesses the following distinct advantages:

- Organization of data at county level, permitting more precise geographic analyses.
- Far more extensive coverage of variables than any other study.
- More extensive validity and reliability testing than any other study.
- Greater numbers of physician responses than all others.

The research team paid careful attention to possible sources of error in the data available to it. To make usable contributions to health services research, the researchers (1) limited the scope of their inquiry to reliable items, and (2) took steps to recode items into more reliable forms. Generally, only items deemed reliable--those with kappas of .60 or greater for most data elements, or with proportions of agreement of .90 or greater for dichotomous items--were included in the analysis. The research team made a limited number of exceptions to this rule, in instances where substantive interest was high. In order to view the findings of this report with appropriate caution, readers should review Table II-2 before accepting the findings in the chapters to follow. Readers should also note that specific requirements of the analyses presented in Chapters III, IV, and V led to different approaches to missing data and weighting of cases. Described individually in each chapter, these differences in approach resulted in the reporting of different numbers of total cases. These details notwithstanding, the research team believes it has assembled a data set combining the best features of USC's work and the ARF. With the caveats specified in this chapter, the resulting data base appears useful for addressing important research questions.

Chapter References

Adams, F. H. and Mendenhall, R. C. (eds.), "Profile of the Cardiologist: Training and Manpower Requirements for the Specialist in Adult Cardiovascular Disease." American Journal of Cardiology 34:389-450, 1974.

Cherkin, D., Lawrence, D. 1977. "An Evaluation of the American Medical Association's Physician Masterfile as a Data Source--One State's Experience." Medical Care 15(Sept.):767-799.

Epstein, W. V., and C. V. Henke. 1979. "Study of Internal Medicine." (Letter) Annals Int. Med. 91(Oct.):649-650.

Hartmann, D. P. 1977. "Considerations in the Choice of Interobserver Reliability Estimates." J. Applied Behavior Analysis 10:103-116.

Mendenhall, R. C. et al., Internal Medicine Practice Study Report USC/ DRME D-1055). University of Southern California School of Medicine, Los Angeles, 1977.

Perrin, E. B., E. B. Harkins, M. M. Marini. 1978. Evaluation of the Reliability and Validity of data collected in the USC Medical Activities and Manpower Projects. Seattle, WA: Battelle Human Affairs Research Centers.

CHAPTER III

PHYSICIAN PRODUCTIVITY AND LABOR SUPPLY

The productivity and labor supply of physicians constitute core issues in health manpower. These factors are important determinants of the availability of services. The present chapter reports findings on the determinants of (1) the number of patients that individual practitioners are able to see in a given period of time, and (2) the number of hours per week that practitioners are willing and able to work. Thus, this chapter explores the factors associated with both productivity (measured as numbers of patients seen) and labor supply (measured as hours worked by individuals). The findings presented here address issues detailed in Chapter I. In examining data on physician productivity and labor supply, the research team focused on specialty, resources (e.g., aides, experience), and practice organization. These features of the investigation come close to representing replications of earlier studies. In addition, however, the present study controls for case mix, both directly and through its impact on average time per patient encounter.

The present investigation also differs from previous work in health economics in its attempt to shed light on interspecialty differences in productivity. Economic analyses of productivity have traditionally restricted their focus to differences within specialties, identifying such factors as employment of aides and practice organization as important. Economists have refrained from making comparisons across specialties under the assumption that members of different specialties produced different products. With nearly equal ease this argument could be made for comparisons of individual physicians within the same specialty. In a technical, economic sense, though, products differ only if production functions associated with them are different. Production functions can differ with regard to functional form, the set of inputs included, or the coefficients on a given functional form. The presumption in the literature that different specialties produce different products has not been explicitly tested, and only the crudest indicators of differences in product among physicians in a given specialty have been used. The analysis presented here includes more refined variables reflecting case-mix, thus partially adjusting for "product" differences. In this way, then, this chapter compares specialties by determining whether similar factors have the same importance in affecting productivity within different specialties, controlling for case mix.

Examination of more aggregate data from another source--the AMA Periodic Survey--helps define this chapter's major issues. The figures in Table III-1 indicate important differences in hours worked and patients seen among categories of physicians that include most specialties considered here. Average hours worked per week range from a high of 53.2 for surgeons to a low of 48.8 for pediatricians. Average number of hours spent in direct patient care run in approximately the same order. Total weekly visits range from 180 per week for general and family practitioners to 110.8 per week for surgeons.

The most obvious issue raised by Table III-1 is why physicians in different specialties see different numbers of patients per week. Differences among specialties in weekly hours worked, though quite noticeable in the table, do not seem on the basis of inspection to account fully for differences in weekly patient visits. In fact, physicians in specialties that work the most weekly hours tend to see the

TABLE III-1

DIFFERENCES AMONG SPECIALTIES IN WEEKLY PATIENT VISITS AND HOURS WORKED: AMA DATA, 1978

Variable	General Practitioners[1]	Internal Medicine[2]	Surgery[3]	Pediatrics
Average number of weeks worked per year (1977)	47.2	47.1	47.0	47.2
Average number of hours worked per week	49.5	52.8	53.2	48.8
Average number of direct patient care hours per week	45.8	47.8	48.2	44.5
Percent time direct patient care (Row 3÷Row 2)	.93	.91	.91	.91
Average number of total patient visits per week	180.0	118.6	110.8	148.1
Hospital Visits as percentage of total visits	19.6	37.8	27.8	14.7
Total patient visits per hour (Row 4÷Row 2)	3.63	2.25	2.08	3.03
Direct patient care per visit (minutes, Row 3x60÷Row 5)	15.3	24.2	26.1	18.0

Source: AMA Profile of Medical Practice, 1979 (Gaffney and Glandon, editors).

[1] Includes General and Family Practice.

[2] Includes Internal Medicine, Cardiology, Gastroenterology, and others.

[3] All surgical specialties.

fewest patients. It appears likely that other considerations, such as differences in the nature of the product, underlie this inverse relationship. Internists, for example, may provide a different product from general practitioners, delivering different services, utilizing different resources, and treating different sets of presenting conditions.

This chapter applies two perspectives to the observed variation in productivity and labor supply. The first involves, in the assessment of interspecialty productivity differences, consideration of face-to-face encounter time as a means of measuring differences in the nature of products from specialty to specialty. The second applies direct and indirect measures of case mix and resources expended in each patient encounter, an extension of the previous literature on physician productivity. This two-faceted analysis will reexamine ongoing issues in health manpower such as the contributions to productivity of aides, physician experience, and group practice. It will provide a new look at the impact of higher physician reimbursement on labor supply. Finally, it will determine the "specialty effect," or impact of specialty membership on service delivery, and offer a preliminary explanation for this effect.

Methods

As in this report as a whole, the analysis of labor supply and productivity in the present chapter relies mainly on multiple regression analysis, and restricts its scope to family practice, internal medicine, cardiology, pediatrics, and orthopedic surgery. The equations to follow represent estimates of (1) pooled specialty equations predicting visits per week, (2) within-specialty production functions, and (3) labor supply functions. The research team restricted its investigation to office-based practitioners, as have most previous productivity analyses. This method of evaluating productivity has several advantages over alternative approaches. Encounters and physician aides are better defined and more precisely estimated in office settings than hospitals or universities. Most providers in the present study, furthermore, are office based.

The USC/ARF data set provided records of 3139 physician respondents in the five specialties. The research strategy adopted in this chapter, though, necessitated the making of choices among available case records and data elements, eliminating some of each from the study. Restriction of this chapter's perspective to office-based practitioners resulted in a reduction of about 25 percent from the original 3139 cases. The research team, furthermore, chose to include only cases with complete data for all variables considered in this chapter; this resulted in a reduction of cases available for analysis to around 1100.

In the productivity analysis, visits during the survey week served as the dependent variable, while the respondent's estimate of his or her usual hours worked served as the outcome variable in estimating labor supply. In estimating the production and labor supply functions, actual hours worked and usual hours worked were used in alternative specifications. In general, actual hours as an input in the production functions and usual hours as the dependent variable in the labor supply functions provided the best fits without changing the substantive results. This is not surprising if a particular week's activities reflect a large random component.

The research team used the transcendental-exponential form developed by Reinhardt (1975) to estimate the production functions. This form was chosen over the major alternatives of either the Cobb-Douglas specification or the constant-elasticity-of-substitution (CES) production functions because it is more flexible with regard to the elasticity of substitution than the Cobb-Douglas and because preliminary specification experimentation showed that it performed at least as well as the CES function. For the labor supply functions, two specifications were used. One included the square of price of physicians' services, reflecting nonlinear effects of price on hours worked; the other used the natural logarithm of price, reducing the impact of outliers on the coefficients estimated. Only the latter is reported here. The variables in these equations are outlined in Table III-2, and their means and standard deviations are shown in Table III-3.

Equations presented in this chapter include right-hand variables designed to reflect the physician respondent's mixture of cases and average encounter time, adjusted for the amount of time members of his or her specialty typically spent on each type of case. The index of case-mix specialization is a measure of the deviation of each physician's case load from the case load that typifies his or her specialty.* This index was computed based on the number of cases seen by each physician during the three-day observation period that were among the fifty most

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*The case-mix specialization index was computed as follows. For physician i, the index value was

$$I_i = \sum_{j=1}^{50} (p_{ij} - P_j)\ N_j$$

where

j = 1...50 are the fifty most frequent conditions (3-digit ICDA diagnoses) seen by the specialty
p_{ij} = the proportion of physician i's workload in condition j
P_j = the proportion of the entire specialty's case load in condition category j
N_j = the mean number of cases in category j per physician in the three-day survey period

TABLE III-2

DEFINITIONS OF VARIABLES IN ANALYSIS OF PRODUCTIVITY

Variable	Definition
Total Weekly Visits	Total of physician's face-to-face encounters, both inpatient and outpatient, during the week of survey
Office Visits	Number of physician's face-to-face encounters with out-patients during survey week
Actual Hours	Number of hours worked during survey week
Usual Hours	Number of hours worked during usual week
Usual Office Hours	Number of hours worked in office during usual week
FTE Aides	Number of full-time equivalent employees (all types) per physician in physician's principal office
Experience	Number of years since graduation from medical school
Size of Group	Number of full-time equivalent physicians in primary partnership or group of which physician is member (solo=size of 1)
Solo	= 1 if physician is solo practitioner; = 0 if in partnership or group
Board Certified	Dummy variable, equal to one of physician is board certified; zero otherwise
% Hospital Visit	The percentage of total visits which were to inpatients during survey week
Case-mix Specialization	An index of a physician's case mix as reflected in distribution of diseases seen by the physician as compared with distribution for specialty as whole (at 3-digit ICDA level)

TABLE III-2 (continued)

Variable	Definition
Mean Encounter Time	Physician's average number of minutes per encounter over all encounters during three days of survey week
Expected Encounter Time	The expected mean encounter time in minutes for an individual physician
Physician Price Index	Specialty-specific price index based on prevailing charges under Medicare for selected services (national average = 100)
Medicare Price Index	An index of physician fees at the State level based on Medicare charges on 21 selected procedures. Developed in Burney et al., 1978.
State Consumer Price Index	State Price Index--cross-state consumer price index for 1972 (from Fuchs, Michael and Scott, 1979)
Nurses per Population	LPNs and RNs per 100,000 population in county
Specialists per Population	Number of members in physician's specialty per 100,000 population in county
Physicians per Population	Number of office-based, patient care MDs per 100,000 population in county
Population Density	Number of persons per square mile land area in county
SMSA	= 1 if physician is in SMSA; = 0 otherwise
Region	Northeast = 1 if in NE, 0 otherwise; North Central = 1 if in NC, 0 otherwise; South = 1 if in S, 0 otherwise; West = 1 if in W, 0 otherwise

TABLE III-3

MEANS AND STANDARD DEVIATIONS OF VARIABLES IN ANALYSIS OF PRODUCTIVITY

	Family Practice	Internal Medicine	Cardiology	Pediatrics	Orthopedic Surgery
Total Weekly Visits	167.0 (79.6)	134.0 (61.1)	112.8 (52.9)	151.3 (59.0)	147.1 (58.9)
Total Weekly Office Visits	124.9 (59.6)	74.6 (33.8)	55.7 (28.9)	125.5 (48.8)	85.9 (35.3)
Actual Weekly Hours	52.1 (11.1)	54.7 (10.6)	54.9 (11.1)	48.2 (10.6)	54.3 (12.0)
Usual Weekly Hours	54.0 (13.1)	52.2 (11.3)	55.4 (10.6)	49.1 (13.4)	49.2 (10.8)
Usual Weekly Office Hours	35.3 (8.9)	31.2 (9.4)	28.9 (10.1)	37.7 (8.7)	23.1 (6.8)
FTE Aides	2.8 (1.5)	2.2 (1.6)	2.3 (1.3)	2.4 (1.3)	3.0 (2.0)
Experience	17.9 (10.6)	23.2 (9.9)	21.0 (10.7)	18.7 (10.5)	17.9 (9.0)
Size of Group	4.4 (14.7)	10.7 (72.2)	4.0 (6.0)	5.5 (10.9)	6.1 (15.6)
Solo	.35 (.48)	.33 (.47)	.43 (.50)	.29 (.46)	.30 (.46)
Board Certification	.75 (.44)	.66 (.47)	.81 (.40)	.78 (.41)	.88 (.33)
Percent Hosp. Visit	23.5 (15.2)	41.5 (18.1)	49.5 (16.9)	16.2 (11.8)	39.6 (15.5)
Case Mix Specialization (3-digit level)	-.007 (.45)	.004 (.33)	-.268 (1.4)	.050 (2.1)	-.005 (.32)
Case Mix Specialization* (2-digit)	-.012 (.86)	-.103 (1.6)	.267 (4.5)	-.081 (1.9)	.319 (2.6)
Mean Encounter Time*	12.1 (4.0)	17.4 (6.0)	20.7 (8.2)	11.8 (4.5)	14.6 (5.4)
Expected Encounter Time*	11.3 (.3)	16.2 (.8)	19.8 (1.1)	11.1 (.6)	13.9 (.6)

TABLE III-3 (continued)

	Family Practice	Internal Medicine	Cardiology	Pediatrics	Orthopedic Surgery
Physician Price Index*	99.6 (19.3)	99.9 (21.8)	100.3 (31.5)	100.2 (15.3)	99.1 (25.4)
Medicare Price Index*	94.1 (12.9)	100.0 (15.3)	102.7 (15.8)	100.2 (15.3)	101.2 (16.6)
State Consumer Price Index*	97.2 (9.7)	100.7 (12.1)	102.0 (14.3)	99.6 (13.7)	99.7 (14.1)
Nurses/ 100,000 Pop.*	565 (217)	640 (288)	587 (182)	588 (202)	606 (211)
Specialists/ 100,000 Pop.*	27.2 (11.3)	20.4 (20.4)	4.0 (2.3)	8.1 (3.5)	5.5 (3.0)
Physicians/ 100,000 Pop.*	95.9 (43.4)	131.3 (76.1)	124.5 (43.8)	119.9 (46.5)	118.4 (47.2)
County Pop. Density*	963 (3055)	2949 (8205)	2946 (7961)	1958 (5199)	1761 (5995)
SMSA	.60 (.49)	.84 (.37)	.88 (.32)	.81 (.39)	.80 (.40)
Northeast	.12 (.33)	.23 (.42)	.29 (.46)	.22 (.42)	.23 (.42)
North Central	.34 (.47)	.27 (.45)	.16 (.37)	.18 (.39)	.18 (.38)
South	.32 (.47)	.26 (.44)	.36 (.48)	.38 (.49)	.31 (.47)
West	.22 (--)	.24 (--)	.19 (--)	.22 (--)	.28 (--)
Number of Observations	244	288	69	245	112

*Mean based on samples in labor supply functions which were, from left to right, 257, 348, 99, 280, and 127.

frequent conditions seen by all specialty members. For these five specialties, the top fifty conditions accounted for from 62 percent (family practitioners) to 86 percent (orthopedic surgery) of the average physician's case load. Scores on this case mix index were distributed around a mean of 0, positive values accruing to physicians who confined their work largely to cases within the most frequent of fifty leading disease categories, negative values to physicians who treated many cases in less common categories. Physicians whose case mix duplicated, in exact proportion, the fifty most frequent cases seen by other members of his or her specialty, would receive a score of zero. The conditions comprising the fifty most frequently seen by the specialties examined in this chapter, and associated frequencies, as well as the frequency of the "residual" category of diseases, appear in Appendix III (Tables III-A through III-E).

A variable measuring expected encounter time* was devised to capture the individual physician's tendency to treat conditions that members of his or her specialty found particularly time-consuming. Scores on this index represent summations of the products of each physician's frequency of encounter with each condition, times the average length of time

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*Expected encounter time was computed as follows. For physician i, the expected encounter time was

$$E_i = \sum_{j=1}^{51} p_{ij} T_j$$

where

j = 1,...51 are the fifty most frequent conditions (3-digit ICDA diagnoses) plus a 51st category contained all remaining conditions
p_{ij} = the proportion of physician i's workload in condition j
T_j = the mean face-to-face encounter time in minutes for the specialty as a whole for patients with condition j

members of his or her specialty take in patient encounters for this condition. Rather than measuring the deviation of the physician's case mix from that typical of his or her specialty, the expected time index reflects the choice of cases demanding greater expenditures of the resource time. Computed on the basis of average encounter time for each specialty as a whole for each condition, this index provides a benchmark against which to gauge individual tendencies to spend large amounts of time on particular types of cases.

Findings

Table III-3, the table of summary statistics, provides an overview of the data used in this analysis of productivity and labor supply. For these specialties, variation in patients seen and weekly hours worked by physicians in different specialties occurs in a manner somewhat different from the pattern in the AMA figures. Family practitioners tend to work the most hours per week (according to "usual hours" reported), while pediatricians and orthopedic surgeons, the only surgical specialty included in this study, work the fewest. As in Table III-1, though, several specialties reporting high numbers of hours worked see relatively few patients. Apparently, the translation of hours worked into patient visits differs among specialties. The analysis to follow concentrates on explaining both the variation in hours worked and the problematical transformation of these hours into actual patient visits.

Productivity

Factors Affecting Weekly Patient Visits. A simple set of models, shown in Table III-4, offers an important clue to why the ratios of hours worked to patients seen differ from specialty to specialty. This table presents multiple regression coefficients from equations predicting

Table III-4

DIFFERENCES AMONG SPECIALTIES IN PATIENTS SEEN PER WEEK, REGRESSION ESTIMATES[1,2]

Independent Variable	Dependent Variable ln Total Weekly Visits		
Constant (Internal Medicine)	4.8 (38646)***	3.44 (417)***	3.45 (354)***
Family Practice	.21 (34.9)***	---	-.015 (.3)
Cardiology	-.18 (10.3)***	---	-.10 (6.6)**
Orthopedic Surgery	.10 (4.8)*	---	-.009 (.1)
Pediatrics	.14 (15.5)***	---	-.02 (.7)
ln Actual Hours	---	.85 (408)***	.85 (389)
ln Mean Encounter Time	---	-.73 (971)***	-.72 (761)***
Adj. R^2	.06	.56	.56

[1] Dependent Variable: natural logarithm of patients seen during study week.

[2] Regression equations are based upon pooled sample of five physician specialties: family practice, internal medicine, cardiology, pediatrics, and orthopedic surgery.

*p<.05

**p<.01

***p<.001

numbers of patients seen by five specialties. The equations are based on pooled physician data from five USC surveys. Coefficients estimated for dichotomous variables representing membership in family practice, cardiology, orthopedic surgery, and pediatrics indicate consistently significant differences from internal medicine. Further, in the first column, the dummy variables are significant as a group. With the exception of cardiology, every specialty sees more patients than internal medicine.

But, for the most part, specialty differences disappear when two variables are added to the equations, actual hours worked during the week-long period specified in the survey, and average encounter time reported by respondents during patient contacts. On the basis of pooled data, these variables are clearly stronger than specialty membership. Coefficients on the two variables are far larger than those on the specialty membership dummies, and add a great deal to the percentage of variance explained. Admittedly, this equation borders on being an identity. Were it, however, simply an identity, one would expect the coefficients on actual hours and encounter time to be +1 and -1, respectively.* And, while measurement error would bias them towards

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*For example, suppose the following simple identity explained variations in patients seen V as a function of actual hours worked A and mean encounter time E:

$$V = \frac{(A - aA) \cdot 60}{(E + bE)}$$

where a is the proportion of hours worked that are not spent in patient care and b is the overhead time associated with an encounter.

Taking the logs of both sides yields the following equation:

$$\ln V = \ln \left(\frac{(1-a) \cdot 60}{1+b}\right) + \ln A - \ln E$$

zero, they are significantly and far below what would be expected. This suggests decreasing returns to both more hours worked and reductions in encounter time. Also, the proportion of variance explained (.56) is far below 1.0, suggesting that considerable within-specialty variation remains. Finally, it can be argued that, *a priori*, face-to-face encounter time need not be related to the number of patients seen; conceivably, all differences in output across physicians could arise from economies in the use of the substantial amount of time not spent face-to-face with patients. For example, the mean estimates suggest that family practitioners spend only 55 percent of their time in direct contact with patients. In any case, this table suggests that researchers must seek the explanation of interspecialty variation in productivity on the basis of hours worked and average encounter time.

Table III-5 presents multiple regression coefficients predicting from production function estimates the natural log of weekly patient visits in five specialties. Despite scattered differences, this table generally demonstrates that similar factors contribute to productivity within each specialty. Among coefficients large enough to be statistically significant, magnitudes and signs are generally alike. These similarities suggest than an equation of the form presented in Table III-5 would produce much the same coefficients if estimated on the basis of a pooled specialty sample, even if it included dichotomous variables representing specialties on the right-hand side.

Substantively, Table III-5 suggests that a number of factors contribute to productivity. Board certification has a mixed effect, contributing negatively in internal medicine and cardiology, positively in the other specialties. The percentage of his or her cases a physician

TABLE III-5

SPECIALTY PRODUCTION FUNCTION ESTIMATES CONTROLLING FOR CASE MIX[1]

	Specialty				
Independent Variables	Family Practice	Internal Medicine	Cardiology	Pediatrics	Orthopedic Surgery
Constant	6.43 (5.3)*	6.38 (4.7)*	14.92 (5.4)	-.45 (.04)	-5.35 (1.9)
ln Actual Hours	.25 (.1)	.51 (.4)	-.64 (.1)	2.22 (11.8)***	3.41 (10.8)***
Actual Hours	.01 (.9)	.002 (.02)	.03 (.5)	-.04 (7.2)**	-.05 (6.4)*
FTE Aides	.02 (.1)	.10 (6.9)**	.19 (2.6)	.17 (15.2)***	.11 (3.6)
FTE Aides^2	.006 (.8)	-.004 (.9)	-.026 (2.0)	-.019 (10.6)***	-.006 (.9)
Experience	.03 (14.7)***	.02 (4.5)*	.02 (.6)	.02 (7.1)**	.01 (.4)
Experience^2	-.0006 (8.7)**	-.0003 (3.1)	-.0004 (.9)	-.0005 (8.4)**	-.0001 (.03)
Size of Group	.006 (1.4)	.006 (7.5)**	.008 (.2)	-.007 (2.0)	.017 (6.9)**
Size of Group^2	-.00004 (2.5)	-.00001 (7.9)**	-.0003 (.2)	.00004 (.4)	-.0001 (5.3)*
Board Certified	.11 (4.2)*	-.08 (3.1)	-.19 (1.7)	.09 (2.5)	.17 (3.0)
% Hospital Visits	.005 (11.8)**	.006 (19.8)***	.005 (2.3)	.005 (5.7)*	.006 (6.7)*
Case Mix Specialization	.143 (7.8)**	.001 (.00)	.009 (.1)	.013 (1.3)	-.031 (.1)
ln Expected Encounter Time	-1.51 (3.6)	-1.58 (10.6)***	-3.23 (6.5)*	-.81 (2.4)	-.61 (.6)

TABLE III-5 (cont.)

	Specialty				
	Family Practice	Internal Medicine	Cardiology	Pediatrics	Orthopedic Surgery
F-statistic	13.9***	11.7***	2.4*	7.6***	6.2***
Adjusted R^2	.39	.31	.20	.25	.36
Mean Total Visits	167	134	113	151	147
Number of Observations	244	288	69	245	112

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[1] Dependent variable = natural logarithm of patients seen during study week.

*p<.05

**p<.01

***p<.001

sees in the hospital appears to affect productivity, practitioners seeing a high proportion of hospitalized patients seeing more patients all together. Of particular interest here, case-mix specialization has a significant effect only among family practitioners, members of this specialty who confine their work to conditions typically encountered by their colleagues tending to see more patients per week. Expected encounter time, though, has a consistent effect, physicians with a more time-consuming case mix tending to see fewer patients.

The variable representing expected encounter time in Table III-5 is particularly meaningful in the present discussion. Its negative relation with productivity reinforces impressions gained from Table III-4 that encounter time is the factor which mediates between hours worked and productivity. Table III-5, though, provides support for the inference that case mix affects productivity specifically through its impact on encounter time. The case mix specialization index, a measure whose computation involves no time factor, has no consistent effect on productivity. The measure of expected time, though, reflecting both the distribution of conditions encountered and the time required to treat these conditions, has a consistent, negative effect on productivity.

Expected encounter time, a measure reflecting both case mix and encounter time, makes a statistically significant contribution to the explanation of productivity. But this contribution is not substantively great. If expected encounter time is excluded from equations such as those represented in Table III-5 (see Appendix Table III-F), only a small amount of explanatory power is lost. Thus, given this finding and given that the coefficient estimates are similar in sign and pattern to those of Reinhardt, it appears that the omission of case mix measures does not substantively affect the results found in the literature.

Other regression equations provide evidence that encounter time, rather than case mix, is the more important variable mediating between hours worked and patients seen per week. Table III-6 presents regression coefficients from equations including both expected and actual encounter time (in ratio form). One interpretation of this specification is that for a given case mix (as reflected in expected encounter time) the physicians spending more time with their patients are providing a higher quality product, at least from the patient's point of view. There is a trade-off between higher quality visits and more patients seen per week.* This table shows that the ratio or quality index contributes very importantly to accounting for variations in the number of patients seen. Further, by comparison with Table III-5 and Appendix Table III-G, it is clear that the variation in encounter time, unrelated to case mix, is the key factor determining weekly output. Admittedly, encounter time in itself is a measure of productivity and is a function of the other inputs, as shown in Appendix Table III-H. However, the bias due to its endogeneity may be small.

Contributions of Specific Resources. A major strength of the Reinhardt specification is its ability to demonstrate nonlinear effects via linear multiple regression. While these effects cannot be inferred directly from the coefficients appearing in Tables III-5 and III-6, they can be evaluated indirectly. The marginal product in terms of patient visits can be determined by taking the first derivative of the outcome

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*If the usual production function is $Q=F(K,L)$, the revised one estimated in Table III-6 can be seen as $Q \cdot q_I=F(K,L)$, where q_I is an index of quality. Further, q_I is a linear function of actual and expected encounter time, viz., $q_I=b\cdot\frac{\text{Actual Mean Encounter Time}}{\text{Expected Mean Encounter Time}}$.

TABLE III-6

SPECIALTY PRODUCTION FUNCTION ESTIMATES WITH BOTH ACTUAL AND EXPECTED ENCOUNTER TIME INCLUDED[1]

	Specialty				
Independent Variable	Family Practice	Internal Medicine	Cardiology	Pediatrics	Orthopedic Surgery
Constant	1.36 (.8)	1.96 (1.2)	3.15 (.7)	-1.17 (.6)	-3.28 (1.8)
ln Actual Hours	.78 (2.1)	.54 (.8)	.10 (.01)	1.82 (12.4)***	2.28 (7.9)**
Actual Hours	.003 (.1)	.003 (.1)	.008 (.1)	-.023 (4.7)*	-.027 (3.4)
FTE Aides	.03 (.7)	.05 (3.8)	.04 (.2)	.09 (6.8)**	.08 (3.4)
FTE Aides^2	.001 (.01)	-.001 (.2)	-.002 (.01)	-.010 (4.3)*	-.003 (.6)
Experience	.02 (5.6)*	.02 (7.3)**	.02 (2.0)	.01 (2.5)	-.001 (.01)
Experience^2	-.0002 (1.0)	-.003 (5.0)*	-.0003 (1.5)	-.0003 (3.1)	.0002 (.4)
Size of Group	.004 (.7)	.002 (2.0)	.02 (1.2)	-.01 (3.3)	.01 (1.9)
Size of Group^2	-.00003 (1.7)	-.000002 (2.0)	-.0006 (2.4)	.00008 (2.5)	-.00003 (.8)
Board Certified	.03 (.5)	-.01 (.1)	-.16 (2.5)	.01 (.1)	.08 (1.2)
% Hospital Visits	.004 (10.1)**	.003 (8.0)**	.007 (7.4)**	.002 (2.2)	.006 (10.9)***
Case Mix Specialization	.039 (.9)	.003 (.00)	-.048 (3.7)	.003 (.1)	-.101 (1.8)
ln(Mean Time/ Expected Time)	-.608 (116.8)***	-.816 (233.3)***	-.759 (73.7)***	-.674 (133.9)***	-.531 (68.2)***

TABLE III-6 (continued)

	Specialty				
	Family Practice	Internal Medicine	Cardiology	Pediatrics	Orthopedic Surgery
F-statistic	29.8***	38.7***	10.1***	22.7***	15.9***
Adjusted R^2	.59	.61	.62	.52	.62
Mean Total Visits	167	134	113	151	147
Number of Observations	244	288	69	245	112

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[1] Dependent variable = natural log of patients seen during study week.

* $p<.05$
** $p<.01$
*** $p<.001$

variable at the mean of the input variable and output measure. Table III-7 presents the marginal products,* that is, the increase (or decrease) in weekly patient visits, made possible by an additional unit of resources (hours, aides, etc.) over and above the mean in each physician specialty.

Table III-7 reiterates the negative relation of expected encounter time to productivity, and the mixed relation of board certification to weekly patient visits. This method of evaluating nonlinear relations, though, provides several additional insights into the impact of additional resources. According to the table, an additional hour worked by a physician providing his or her specialty's mean number of hours would increase patient visits by 2.5 visits at most. Family practitioners working one additional hour would see, on the average, 2.5 more patients. The diminishing return to hours worked is clearly seen when the magnitude of this marginal product is compared with the average number of patients which family practitioners in the USC sample see per hour, which is 3.2 (= 167.0 visits/52.1 hours).

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*The marginal product of hours worked at the means is calculated as:

$$\frac{\partial \text{Weekly Visits}}{\partial \text{Hours}} = \left(\frac{b_1}{\text{Mean Hours}} + b_2\right) \cdot \text{Mean Weekly Visits}$$

where
b_1 is the coefficient on ln Hours
b_2 is the coefficient on Hours

The marginal products of the means for the variables entered as $a_1X + a_2X^2$ (i.e., aides, expereince, and size of group) are calculated as:

$$\frac{\partial \text{Weekly Visits}}{\partial x} = (a_1 + 2a_2X) \cdot \text{Mean Weekly Visits}$$

where X is the mean of x.

TABLE III-7

MARGINAL PRODUCTS AT MEAN INPUT AND OUTPUT LEVELS

Input	Family Practice	Internal Medicine	Cardiology	Pediatrics	Orthopedic Surgery
Actual Hours	2.5	1.5	2.1	.9	1.9
Aides	9.0	11.1	7.9	11.9	10.9
Experience	1.4	.8	.4	.2	.9
Size of Group	1.0	.8	.6	-1.1	2.3
Board Certification	19.4	-10.3	-19.5	14.2	27.3
Percent Hospital Visits	.8	.8	.6	.8	.9
Expected Encounter Time	-22.3	-13.1	-18.4	-11.0	-6.5

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[1] Based on coefficients in Table III-5 and means in Table III-3.

The marginal products associated with other additional inputs appear equally small. Among the internists, pediatricians, and orthopedic surgeons sampled here, an additional aide would allow the physician to see between ten and twelve additional patients per week. The marginal product is lower among family practitioners and cardiologists. Readers should note that these judgements about aides are based only on additional patients the physician him or herself could see due to their presence, not on additional patients a given medical practice could treat due to the presence of aides who cared for patients alone. According to a series of derivatives taken at various numbers of years of experience, output increases as physicians become more experienced; the marginal product increases up to approximately 20 years of experience, then declines. Finally, group size generally has only a small positive marginal product.

The two factors identified in Table III-4, encounter time and hours worked, remain the most important determinants of productivity, conceived as numbers of patients seen per week. The multiple regression analysis summarized in Table III-5 and III-6 suggests that difference in case mix, both within and among specialties, significantly affects productivity through its influence on the average time the physician spends with his or her patients. Encounter time is an important part of the pattern of care which each physician follows, and will receive specific attention in Chapter IV. Labor supply, or the hours physicians contribute to the market, though, is a traditional concern of health economists, and remains a significant determinant of productivity.

Labor Supply

The estimates of labor supply equations for five specialties appear in Table III-8. All the equations were estimated with the natural log of

TABLE III-8

SPECIALTY LABOR SUPPLY FUNCTION ESTIMATES
(Dependent Variable = Natural Log of Actual Hours)

Independent Variables	Specialty				
	Family Practice	Internal Medicine	Cardiology	Pediatrics	Orthopedic Surgery
Constant	3.03 (4.6)*	7.24 (69.2)***	5.80 (16.1)***	3.09 (13.1)***	4.46 (4.9)*
ln Price	-.219 (5.5)*	-.225 (14.3)***	.006 (.01)	-.127 (1.2)	-.130 (1.6)
ln State Price Index	-.181 (1.1)	-.217 (5.2)*	-.470 (8.4)**	-.107 (.8)	.116 (.3)
Nurses/ Population	.00002 (.1)	-.00003 (.2)	.0001 (.4)	-.00003 (.2)	-.0003 (3.7)
Experience	.003 (.3)	.003 (.7)	.007 (.7)	.009 (3.5)	.012 (1.1)
Experience^2	-.00003 (.1)	-.00003 (.2)	-.0002 (1.0)	-.0002 (4.2)*	-.0003 (.9)
Specialists/ Population	.001 (.6)	.001 (1.7)	-.026 (6.1)*	-.005 (1.3)	.004 (.2)
Size of Group	.002 (.8)	.0001 (.1)	-.011 (4.1)*	.0005 (.2)	.005 (.5)
Size of Group^2	-.00001 (.8)	.6E-8 (.00)	.0001 (2.4)	-.5E-6 (.3)	-.0001 (.5)
Board Certified	.012 (.1)	.010 (.2)	-.007 (.02)	-.016 (.2)	-.163 (5.1)*
Case Mix Special- ization	.037 (1.2)	.067 (3.3)	-.016 (1.2)	-.003 (.2)	.014 (.04)
ln Expected Encounter Time	1.102 (4.7)*	-.487 (3.6)	.119 (.1)	.768 (7.7)**	-.145 (.6)
F-statistic	2.00*	2.9***	1.7	2.0*	1.1
Adjusted R^2	.04	.06	.08	.04	.01
Mean Usual Hours	54.8	52.3	53.8	48.9	49.8
Number of Observations	257	348	99	280	127

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*$p < .05$, **$p < .01$, ***$p < .001$

usual weekly hours as the dependent variable. Generally, the specification with usual hours produced a better fit when compared with actual hours. Appendix Table III-I presents equations with actual hours that demonstrate this point.

The price variable in these equations is a proxy measure which varies from specialty to specialty, based on prevailing Medicare charges in the physician's county of residence. This measure is probably most accurate for family practitioners and internists because it is based on office visit charges rather than procedure charges (the only prices available for orthopedists and cardiologists) and a general State price index (used for pediatricians, from Burney _et al_., 1978).

The per capita supply of nurses was included as a proxy for the price of aide services, and a State consumer price index (Fuchs, Michael and Scott, 1979) was included to control for cost-of-living differences. The greater availability of nurses had no impact on labor supply in these estimates. Having a higher cost of living tended to reduce hours supplied, though generally not significantly.

Numbers of specialists per population in the respondent's county of residence, a possible indicator of competition, generally had no apparent impact on hours worked. In other specifications, physicians per capita had a stronger effect than this measure, but this variable did not effect the coefficient or price in any case. However, the provocative exception is cardiologists, among whom more competitors resulted in significantly fewer hours worked. Case mix and encounter time had no consistent impact on labor supply. Among group practitioners, group size did not have significant effects on hours worked. Board certification, on the other hand, had a fairly large effect on hours worked by orthopedic surgeons.

The coefficient on price is of most interest here, reflecting the physician's tendency to increase or decrease his or her work hours in response to price increases. In Table III-8, negative coefficients on the natural log of price would suggest that physicians decrease their output in response to higher rewards. Their labor supply curve is, in other words, backward-bending. Equations for all specialties except cardiology support this hypothesis. Higher prices for their services induce physicians to supply fewer hours, though this elasticity varies from 0 to -.4. On the other hand, it is puzzling that, if anything, increases in the cost of living seem to affect hours worked negatively. This is inconsistent in some cases with the interpretation of a backward-bending supply curve, but may be reflecting, given the measure used, other factors besides local consumer prices. In any case, the most striking observation from Table III-8 may be that the labor supply equations explain so little variance. The table recalls the work of Sloan and Vahovich, neither of whom found strong effects in similar equations.

NOTES

American Medical Association. 1979. Profile of Medical Practice 1979. (Gaffney, J.C. and Glaudon, G.L., editors). Chicago: AMA.

Burney, I.L. *et al.* 1978. "Geographic Variation in Physician's Fees: Payments to Physicians Under Medicare and Medicaid." J.A.M.A. 240(Sept. 22):1368-71.

Fuchs, V.R., R.T. Michael, and S.R. Scott. 1979. "A State Price Index." National Bureau of Economic Research (Mimeo).

Reinhardt, U. 1975. Physician Productivity and the Demand for Health Manpower. Cambridge, MA: Ballinger Publishing Company.

CHAPTER IV

PRACTICE PATTERNS IN SEVEN TRACER CONDITIONS

While productivity and labor supply have occupied much of the attention of health care researchers, they encompass only part of the material which policymakers must understand to plan for future manpower needs in the United States. Models which explain numbers of hours worked and patients seen directly address the process of production. They examine the products involved in physicians' services only indirectly, as did the equations presented in the preceding chapter through the inclusion of actual and expected encounter time. But investigators require a more direct understanding of the services rendered during patient encounters for two major reasons. First, an understanding of the variation in encounter time among specialties, and hence of interspecialty differences in productivity, may hinge on comprehension of differences among specialties in services delivered. Second, and more basic, researchers must understand the interspecialty variation in components of care to grasp the substance involved in service delivery and to evaluate the outcomes of plans designed to enhance production.

As Chapter I notes, researchers have identified a variety of factors believed to influence the components of care physicians deliver in response to standard presenting conditions. Previous studies have found evidence that training, practice organization, and geographical surroundings, in addition to specialty membership, help influence the type of care physicians render. Research dating from the early 1950s through the present has compared physician practice patterns in group versus solo practice, among physicians with and without board certification, and in rural versus urban areas. As with most research on physicians, though, the differences found on these dimensions did not account for differences in case mix. As in the analysis of productivity and labor supply, the data available in this study allow some control for case mix differences, at least in part.

This chapter will focus on two principal features of physicians' practice patterns. First, it will consider the interspecialty variation in components of care provided during encounters with patients, that is, the diagnostic and therapeutic procedures ordered or performed, and the tendency to refer patients to other physicians. Second, this chapter will examine the variation among specialties of time spent during encounters with patients. Analyses of both these features of physician behavior will add substance to the discussion of productivity, as well as provide additional information on the causes of interspecialty variation in encounter time.

Although the exploration of productivity and labor supply followed the strategy of explaining variance in weekly hours worked and patients seen, the discussion of practice patterns will follow a different strategy. Arguments and statistics presented in this chapter will test a specific null hypothesis, namely, "members of all specialties treat similar cases in essentially the same manner." This chapter's aim, then, is to determine, within the limits of available data, whether an independent "specialty effect" exists in physician patterns of care which cannot be attributed to more essential factors. Such a specialty effect could have important implications for health manpower policy.

Methods

Analysis of practice patterns proceeded through comparison of components of care and encounter time recorded during visits by patients with seven tracer conditions. Conditions selected for this analysis include: essential benign hypertension, ischemic heart disease, asthma, nasopharyngitis (including colds and upper respiratory infections), tonsillitis and pharyngitis, pneumonia, and low back pain. Led by its physician members, the research team selected these conditions as tracers for several reasons. First, each condition was seen frequently enough by at least three of the specialties examined here to permit statistically significant comparison. The research team selected only tracer conditions which were encountered by each specialty at least 100 times during the three-day reporting period without comorbidity. Second, the research team selected tracer conditions for which its physician members could specify "standard" diagnostic and therapeutic procedures which had been recorded in the USC studies with high levels of reliability.

Initial testing of the null hypothesis proceeded through a contingency table analysis of components of care among six specialties for seven tracer conditions. The analysis comprised two stages. First, "zero-order" tables were computed, which compared the activities of all specialties encountering sufficient numbers of each tracer. No control variables were applied at this stage. The second step tested the zero-order relationships by holding a series of single control variables constant. The goal of this early analysis was to learn the basic differences among specialties, controlling for the most obvious factors that could potentially explain away initial observations.

Contingency tables are an impractical method for an elaborate multivariate analysis. But such procedure was essential in the initial stages of this project. In addition to outlining the basic relationships in the data, contingency tables indicate distributions of variables and interaction effects, important preliminary information for analyses involving multiple regression and other multivariate techniques.

The contingency table analysis included no significance tests. While the research team applied some measures of this kind during computer runs, their presence in the tables would have been misleading. Patient encounter data often involves thousands of cases per tracer condition. Tables based on such large numbers of observations generate significant chi-squares even when cell differences are quite small.

No generalizations about interspecialty differences would be valid if differences in cases seen were not taken into account. The USC dataset contained no direct, concrete measures of case severity, such as the outcomes of diagnostic procedures. The dataset did offer analysts several opportunities to generate surrogate measures of case severity. Measures of this kind, used as control variables in the contingency analysis, included the following:

- Patient age: patients over 60 years old were assumed to have more severe illnesses than those under 60.
- Presence of second ICDA code: patients with secondary presenting conditions were assumed to have more severe illnesses than those without secondary conditions.
- Severity-complexity combination: the USC data form requested physicians to estimate the severity and complexity of each presenting condition. To increase the discriminatory power of these essentially subjective items, analysts combined their numerical values, and compared cases falling into the highest and lowest third of the distribution.
- Urgency: the USC data form requested physicians to estimate the urgency of each presenting condition. Because of its high face validity, analysts decided to consider this item separately.

All four control variables, of course, represent approximations. The consistent observation across most tracers that more services are delivered in cases scoring high on these items, though, argues for their utility. While unmeasured variations in severity undoubtedly exist, readers at this stage should concentrate on the degree of robustness of zero-order relationships after available indices of severity have explained all they can.

The research team also took steps to control for physician characteristics (age and board certification), encounter site (office versus hospital), practice organization (solo versus group), patient source (initiation of visit by self or family versus physician referral), and number of visits for the presenting problem. While researchers could identify no theoretical reason for variation in components of care according to the patient's sex, it seemed essential to include this variable as an additional control in the examination of practice patterns.

Many of these variables were included in an extensive comparison of components of care within restricted segments of the patient and physician population. These comparisons appear as a series of contingency tables in Appendix IV (Tables IV-1-A through IV-7-F). While the zero-order tables in this chapter report comparisons based on weights to adjust for stratification and nonresponse (see Footnote 2 in Table IV-1), tables in the appendix are based on raw, unweighted numbers. The research team felt it desirable to present weighted data in the body of the report since they would best reflect actual population parameters, but present unweighted data in the appendix because it served a largely analytical function. Unweighted data in the appendix will also allow readers to construct unweighted, zero-order tables should they wish to do so for future research purposes.

In order to control for a large number of variables simultaneously, multiple regression equations were estimated to predict use of specific components of care for the specified tracer conditions. These equations tested the null hypothesis by including sets of dichotomous variables representing all but one of the specialties to be compared on the right hand side. In the present chapter, the omitted variable was always the one representing internal medicine. The coefficients estimated for each specialty's dummy variable, then, reflected the difference in the probability that the specialty delivered a given component of care as compared to the internists.

The multiple regression analysis tested the null hypothesis in two ways. First, the estimation of statistically significant coefficients for the specialty dummies, despite the explanatory power of the other right-hand variables, was taken as evidence that the null hypothesis was false. Second, researchers estimated two separate equations predicting ordering or administration of each component of care. The first equation contained no dummy variables representing specialty, the second dummies representing all specialties to be compared with internal medicine. The amount of variance explained by each equation was compared, statistical significance of the difference being evaluated by the joint f-test. Significant joint f-tests were taken as evidence for rejection of the null hypothesis. All multiple regression analyses were carried out on the basis of unweighted data.

The comparison of specialty encounter time in connection with each tracer condition also relied on multiple regression analysis. The estimated equations contained the same right-hand variables, at first, as the equations predicting components of care, and applied the same criteria to acceptance or rejection of the null hypothesis. Second, the components of care were included in the same regression equations to determine their effects on encounter time.

While contingency tables present in this chapter include all patient visits, regression equations appear only for selected types of encounters. Equations are estimated for office follow-up visits for essential benign hypertension, ischemic heart disease, and asthma; they are presented for office first visits for nasopharyngitis, tonsillitis and pharyngitis, and low back pain; they appear for follow-up visits in the hospital for pneumonia. Researchers considered it necessary to restrict the scope of these equations because treatment may differ strongly from first to follow-up visits, and from office to hospital encounters. Equations estimated on the basis of all encounters appear in Appendix IV, though, as do equations based on data complementing those used for equations represented in this chapter (see Tables IV-8-A through IV-14-B).

Findings

Zero-order Relations

Tables IV-1 through IV-7 summarize the zero-order relations of specialty to components of care delivered and the average duration of visits for each tracer condition. Between contingency tables, presenting condition made the greatest differences in probabilities that a component of care would be delivered in a patient encounter. Beyond this nonproblematical observation, though, important interspecialty differences seemed to exist.

For all tracer conditions, the tendency to perform or order diagnostic tests tends to parallel degree of specialization. For hypertension, internists and cardiologists perform laboratory tests and chest X-rays more frequently than family practitioners. Internists perform ECGs four times as often as family practitioners, and

TABLE IV-1

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED SPECIFIC SERVICES, ESSENTIAL BENIGN HYPERTENSION[1] (ICDA = 401)

		Specialty	
Service Variable	Family Practice	Internal Medicine	Cardiology
Chest X-ray	3.0 (771)[2]	13.1 (1043)	13.8 (337)
Laboratory tests	22.6 (771)	28.6 (1043)	29.7 (337)
ECG	4.8 (771)	16.3 (1043)	23.1 (337)
Systemic Drugs	66.2 (771)	68.1 (1043)	52.3 (337)
Counseling	20.5 (771)	22.7 (1043)	30.7 (337)
Referral	2.8 (735)	5.8 (960)	13.5 (301)
Visit Duration (minutes)	11.1 (719)	16.6 (987)	19.5 (316)

---

[1] In Tables IV-1 through IV-7, raw data have been weighted according to the following formula:

$$W_i = \frac{\min\limits_{i=1}^{5} (n_i/N_i)}{(n_i/N_i)}$$

where:

W_i = weight for each USC/DRME stratum i
n_i = respondents for each stratum i
N_i = AMA Masterfile population for each stratum i
i = stratum subscript

[2] Figures in parentheses represent the total weighted (deflated) number of observations on which estimates are based. Weighting is to adjust for differential strata sampling and response rates. The weighted number of observations is the minimum number upon which confidence of national estimates can be based. The raw (unweighted) number of observations for each specialty was: Family Practice, 1527; Internal Medicine, 655; and Cardiology, 2397.

TABLE IV-2

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED SPECIFIC SERVICES, ISCHEMIC HEART DISEASE[1] (ICDA = 412 and 413)

	Specialty		
Service Variable	Family Practice	Internal Medicine	Cardiology
Chest X-Ray	9.3 (371)[2]	18.4 (1060)	18.4 (1321)
Laboratory Tests	27.7 (371)	41.8 (1060)	31.8 (1321)
ECG	18.2 (371)	36.3 (1060)	43.7 (1321)
Systemic Drugs	65.3 (371)	67.2 (1060)	42.2 (1321)
Counseling	18.7 (371)	25.0 (1060)	24.2 (1321)
Referral	8.4 (359)	11.4 (1000)	23.0 (1127)
Visit Duration (minutes)	11.8 (345)	18.7 (997)	20.6 (1219)

---

[1] See note 1 to Table IV-1.

[2] See note to Table IV-1. The raw (unweighted) number of observations for each specialty was: Family Practice, 705; Internal Medicine, 2256; and Cardiology, 2639.

TABLE IV-3

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED SPECIFIC SERVICES, ASTHMA[1] (ICDA = 493)

Service Variable	Family Practice	Internal Medicine	Pediatrics
	Specialty		
Chest X-Ray	12.6 (109)[2]	21.8 (133)	15.2 (175)
Laboratory Tests	8.1 (109)	19.2 (133)	15.8 (175)
Pulmonary Function	4.5 (109)	9.5 (133)	3.2 (175
Systemic Drugs	61.7 (109)	74.8 (133)	61.9 (175)
Injection Other	24.2 (109)	16.4 (133)	38.9 (175)
Counseling	37.1 (109)	22.0 (133)	17.9 (175)
Referral	7.9 (102)	13.5 (123)	14.7 (167)
Visit Duration (minutes)	13.1 (96)	16.1 (124)	16.2 (161)

[1] See note 1 to Table IV-1.

[2] See note to Table IV-1. The raw (unweighted) number of observations for each specialty was: Family Practice, 226; Internal Medicine, 303; and Pediatrics, 437.

Table IV-4

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED SPECIFIC SERVICES, NASOPHARYNGITIS AND URI (ICDA 460 and 465)

	Specialty		
Service Variable	Family Practice	Internal Medicine	Pediatrics
Chest X-Ray	2.3 (880)[2]	8.4 (308)	1.3 (506)
Laboratory Tests	10.9 (880)	14.0 (308)	9.3 (506)
Cultures	6.5 (880)	11.8 (308)	21.5 (506)
Systemic Drugs	73.4 (880)	76.0 (308)	61.2 (506)
Injection Other	13.8 (880)	7.1 (308)	4.0 (506)
Referral	1.9 (857)	4.0 (290)	2.1 (485)
Visit Duration (minutes)	8.6 (825)	12.0 (301)	10.3 (481)

---

[1] See note 1 to Table IV-1.

[2] See note to Table IV-1. The raw (unweighted) number of observations for each specialty was: Family Practice, 1756; Internal Medicine, 651; and Pediatrics, 1250.

TABLE IV-5

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED SPECIFIC SERVICES, PHARYNGITIS AND TONSILLITIS[1] (ICDA = 462 and 463)

	Specialty		
Service Variable	Family Practice	Internal Medicine	Pediatrics
Chest X-Ray	1.0 (532)[2]	5.2 (131)	.5 (894)
Laboratory Tests	13.4 (532)	42.2 (131)	10.0 (894)
Cultures	29.7 (532)	42.7 (131)	60.7 (894)
Systemic Drugs	73.0 (532)	74.1 (131)	65.2 (894)
Injection Other	16.7 (532)	10.8 (131)	15.2 (894)
Referral	2.0 (515)	2.9 (129)	3.6 (851)
Visit Duration (minutes)	8.4 (502)	10.8 (126)	9.5 (830)

---

[1] See note 1 to Table IV-1.

[2] See note to Table IV-1. The raw (unweighted) number of observations for each specialty was: Family Practice, 1053; Internal Medicine, 280; and Pediatrics, 2359.

TABLE IV-6

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED SPECIFIC SERVICES, LOW BACK PAIN[1] (ICDA = VARIOUS)

	Specialty		
Service Variable	Family Practice	Internal Medicine	Orthopedic Surgery
X-Ray	22.2 (285)[2]	28.7 (163)	33.5 (902)
Hospitalization	18.6 (271)	27.0 (156)	31.7 (886)
Counseling	36.9 (285)	31.5 (163)	28.2 (902)
Referral	11.0 (269)	25.9 (153)	17.1 (855)
Visit Duration (minutes)	12.0 (249)	16.5 (153)	12.9 (811)

---

[1] See note 1 to Table IV-1.

[2] See note to Table IV-1. The raw (unweighted) number of observations for each specialty was: Family Practice, 563; Internal Medicine, 392; and Orthopedic Surgery, 1210.

TABLE IV-7

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED SPECIFIC SERVICES, PNEUMONIA[1]
(ICDA = 480-486)

		Specialty	
Service Variable	Family Practice	Internal Medicine	Pediatrics
Chest X-Ray	45.1 (234)[2]	53.6 (387)	15.1 (759)
Laboratory Tests	29.7 (234)	33.0 (387)	15.1 (759)
Cultures	9.6 (234)	27.0 (387)	13.2 (759)
Systemic Drugs	55.2 (234)	63.9 (387)	61.6 (759)
Injection Other	13.8 (234)	18.9 (387)	8.7 (759)
Referral	7.7 (321)	16.8 (370)	4.0 (729)
Visit Duration (minutes)	11.4 (219)	19.4 (373)	11.0 (694)

---

[1] See note 1 to Table IV-1.

[2] See note to Table IV-1. The raw (unweighted) number of observations for each specialty was: Family Practice, 520; Internal Medicine, 838; and Pediatrics, 1941.

cardiologists perform ECGs about 50 percent more often than internists (see Table IV-1). Tables presented in Appendix IV indicate that the same general relations hold even after individual severity indices have been held constant, as well as individual physician characteristics. While all specialties perform these procedures more frequently in non-office settings (hospitals, OPDs, and clinics), more specialized fields still do so with greater frequency. The same is true when self-referred patients are separated from those referred by other physicians, and when first visits are distinguished from follow-ups.

The observation that more specialized physicians perform diagnostic procedures more frequently than those less specialized reappears among family practitioners, internists, and cardiologists treating ischemic heart disease (Table IV-2), for family practitioners and internists treating tonsillitis and pharyngitis (Table IV-5) and pneumonia (Table IV-9), and for family practitioners, internists, and orthopedic surgeons treating low back pain (Tables IV-6).

Overall, less specialized physicians tend to prescribe systemic drugs more frequently than those more specialized. For hypertension and ischemic heart disease, family practitioners and internists prescribe systemic drugs with about equal frequency, while cardiologists do so significantly less often. Tables IV-1 and IV-2 illustrate this relation for hypertension and heart disease. As Appendix Tables IV-1-H, IV-1-I, IV-2-H, and IV-2-I show, the relation is clearest among self-referred patients and those visiting the physician for the first time for the associated condition.

Pediatricians appear to follow treatment protocols different from the other specialties studied. In general, they perform X-rays and prescribe systemic drugs less frequently than other primary care physicians, and take cultures more frequently. The strongest instances of these observations occur in colds and URI (Table IV-4) and tonsillitis and pharyngitis (Table IV-5). The tracer condition of pneumonia presents a more complex picture, with internists taking cultures more frequently, but pediatricians seeming to avoid the use of X-rays.

A more meaningful comparison of practice patterns is possible when the analysis confines its perspective to children aged fifteen and under. Both pediatricians and family practitioners treat sufficient numbers of patients in this age group for comparison. As Tables IV-4-A and IV-5-A show (see Appendix IV), pediatricians prescribe systemic drugs less frequently than family practitioners for both colds and URI and tonsillitis and pharyngitis. They perform cultures about three times as often as family practitioners for both sets of conditions.

The zero-order tables present results for counseling and referral, two activities not discussed thus far. While readers may find data in these areas interesting, they must view the pertinent statistics in a cautious manner. On the basis of Battelle's earlier investigation, items on counseling have relatively low kappas. According to analysts with medical training, these items seem especially prone to inaccurate reporting. Referral, an important item in health policy, must likewise be viewed in a tentative manner. Referral statistics presented here are highly skewed, and, according to a cross-tabular analysis (available but not presented here), often reflect a specialist's referral of his or her patient back to the original physician.

The zero-order tables also provide an indication of the variation in average encounter time among specialties treating the seven tracer conditions. In encounters for hypertension and heart disease, average encounter time is 50 percent longer among internists than among family practitioners, and 100 percent longer among cardiologists than among family practitioners. Internists and pediatricians spend somewhat more time in encounters for asthma than family practitioners. Internists have longer encounter times in visits for nasopharyngitis, tonsillitis and pharyngitis and pneumonia than either pediatricians or family practitioners, and have longer encounter times in visits for low back pain than either family practitioners or orthopedic surgeons. With the exception of cardiologists, internists have longer encounter times than any other specialists for all conditions examined here.

Multiple Regression Results

Tables IV-8 through IV-14 present coefficients from multiple regression equations predicting the probability that encounters for the seven tracer conditions will include specific components of care. Containing a large set of variables on the right-hand side, these equations provide a much more complete picture of practice patterns than the zero-order tables. As expected, the indices of case severity, patient age, presence of multiple conditions, the severity-complexity combination, and urgency significantly add to the probability that most components of care will be administered. Physician characteristics occasionally contribute to the probability that components of care will be administered. Board certified physicians, for example, provide fewer components of care for hypertension, ischemic heart disease, and pneumonia, but significantly more systemic drugs for nasopharyngitis and asthma. Solo physicians provide more components of care for hypertension, but fewer for asthma and tonsillitis and pharyngitis. A variable related to encounter characteristics, indicating the number of times the patient has been seen for the condition in question, correlates negatively with use of most components of care.

TABLE IV-8

REGRESSION COEFFICIENTS PREDICTING COMPONENTS OF CARE FOR ESSENTIAL BENIGN HYPERTENSION (ICDA=401), OFFICE FOLLOW-UP VISITS (N=2513)

	Chest X-ray		Systemic Drugs		Counseling		Laboratory Tests		Electro-Cardiogram	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	.11		.46		.35		.14		.12	
Physician Specialty:										
Family Practice	-.09	(51.93)***	-.05	(5.19)*	-.02	(1.62)	-.06	(9.91)**	-.11	(59.21)***
Cardiology	-.02	(.79)	-.18	(40.02)***	.02	(.55)	.01	(.07)	.04	(4.61)*
Physician Characteristics:										
Age	-.001	(1.36)	.002	(5.68)*	-.003	(10.55)**	.000	(.17)	-.001	(2.07)
Board Certification	-.02	(3.93)*	-.03	(2.24)	-.06	(9.63)**	.04	(.04)	-.03	(3.8)
Solo Practice	-.02	(1.92)	.02	(1.40)	.03	(2.77)	-.01	(.09)	.001	(.004)
Patient Characteristics:										
Age	.000	(.22)	.000	(.25)	-.002	(11.00)**	-.000	(.52)	.000	(.19)
Sex (male=0, female=1)	-.02	(4.65)*	.04	(4.92)*	.005	(.08)	-.02	(1.82)	-.02	(3.78)
Multiple Conditions	.02	(3.52)	.003	(.02)	.11	(41.83)***	.11	(43.02)***	.01	(1.24)
Severity-Complexity	.04	(28.94)***	.04	(8.32)**	.04	(13.33)***	.07	(33.02)***	.05	(38.56)***
Urgency	-.01	(1.63)	.04	(10.78)**	.03	(4.82)*	-.01	(1.32)	-.004	(.27)
Encounter Characteristics:										
Office Visit	---		---		---		---		---	
Professional Referral	-.01	(.28)	-.05	(2.81)	.04	(1.96)	.01	(.15)	.001	(.001)
Number of Visits	-.001	(5.29)*	.001	(1.68)	-.001	(6.08)*	-.000	(.49)	-.001	(1.71)
Joint F-statistics, specialty dummies removed	26.17***		20.49***		1.34		5.40**		37.00***	
F-statistic	10.09***		9.07***		12.12***		9.53**		13.04***	
Adjusted R^2	.04		.04		.05		.04		.05	
Mean of Dep. Var.	.08		.71		.24		.25		.11	

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*p<.05; **p<.01, ***p<.001

TABLE IV-9

REGRESSION COEFFICIENTS PREDICTING COMPONENTS OF CARE FOR ISCHEMIC HEART DISEASE (ICDA=412,413), OFFICE FOLLOW-UP VISITS (N=1884)

	Chest X-ray		Systemic Drugs		Counseling		Laboratory Tests		Electro-Cardiogram	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	-.11		.51		.13		-.16		.12	
Physician Specialty:										
Family Practice	-.08	(12.52)***	-.02	(.28)	-.03	(1.15)	-.12	(14.83)***	-.16	(28.16)***
Cardiology	-.004	(.06)	-.22	(66.58)***	-.004	(.03)	-.07	(8.54)**	.12	(22.31)***
Physician Characteristics:										
Age	.001	(.93)	-.001	(.29)	.001	(.34)	.003	(9.48)**	.002	(3.02)
Board Certification	-.004	(.06)	-.14	(35.85)***	-.04	(2.86)	.03	(1.27)	.001	(.002)
Solo Practice	-.01	(.44)	.08	(11.93)**	-.01	(.39)	.08	(13.32)***	.07	(8.34)**
Patient Characteristics:										
Age	.001	(.75)	.001	(.25)	-.002	(5.58)*	-.000	(.00)	-.002	(7.02)**
Sex (male=0, female=1)	-.02	(2.00)	.02	(.78)	-.01	(.29)	.03	(1.83)	-.02	(.84)
Multiple Conditions	-.005	(.09)	.05	(4.05)*	.07	(12.04)**	.08	(12.43)***	-.04	(3.36)
Severity-Complexity	.08	(66.89)***	.04	(6.19)*	.07	(24.16)***	.08	(27.89)***	.12	(70.80)***
Urgency	.01	(1.90)	.06	(16.43)***	.03	(7.19)**	.04	(7.98)**	.03	(4.44)*
Encounter Characteristics:										
Office Visit	---		---		---		---		---	
Professional Referral	.05	(5.47)*	.02	(.36)	.03	(1.18)	-.01	(.09)	.04	(1.69)
Number of Visits	-.001	(4.88)*	.000	(.49)	-.000	(.78)	.000	(.24)	-.001	(8.14)**
Joint F-statistics, specialty dummies removed	6.51**		34.66***		0.58		9.39***		34.11***	
F-statistic	10.36***		12.70***		6.55***		9.71***		22.84***	
Adjusted R^2	.06		.07		.03		.05		.12	
Mean of Dep. Var.	.12		.62		.24		.29		.35	

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*p<.05; **p<.01, ***p<.001

TABLE IV-10

REGRESSION COEFFICIENTS PREDICTING COMPONENTS OF CARE FOR ASTHMA (ICDA=493), OFFICE FOLLOW-UP VISITS (N=298)

Independent Variables	Chest X-ray		Laboratory Tests		Systemic Drugs		Injection Other		Pulmonary Function	
	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	.31		.10		.77		-.38		.11	
Physician Specialty:										
Family Practice	-.13	(5.76)*	-.12	(5.84)*	-.20	(6.65)*	.08	(1.22)	-.05	(2.86)
Pediatrics	-.24	(12.83)***	-.19	(9.28)**	-.16	(2.62)	.14	(2.57)	-.13	(11.19)**
Physician Characteristics:										
Age	.001	(.33)	.000	(.03)	-.01	(10.98)**	.004	(2.36)	-.000	(.004)
Board Certification	-.09	(4.67)*	-.001	(.001)	.15	(6.00)*	.06	(1.00)	.02	(.70)
Solo Practice	-.09	(4.55)*	-.06	(2.06)	.02	(.10)	.12	(3.83)	-.04	(2.23)
Patient Characteristics:										
Age	-.002	(3.01)	-.001	(.76)	.002	(2.04)	-.003	(2.89)	-.001	(1.14)
Sex (male=0, female=1)	.03	(.78)	-.04	(1.06)	.06	(1.28)	-.10	(3.60)	-.03	(1.27)
Multiple Conditions	.02	(.28)	.04	(.94)	-.01	(.01)	.06	(1.38)	-.02	(.48)
Severity-Complexity	.02	(.30)	.08	(7.90)**	.02	(.16)	-.02	(.32)	.01	(.28)
Urgency	.003	(.01)	-.004	(.04)	.07	(4.36)*	.16	(31.29)***	.01	(.22)
Encounter Characteristics:										
Office Visit	---		---		---		---		---	
Professional Referral	.11	(2.04)	.04	(.32)	.03	(.08)	-.08	(.60)	.13	(8.32)**
Number of Visits	-.002	(4.63)*	.001	(.45)	-.002	(2.33)	.01	(23.49)***	-.001	(.86)
Joint F-statistics, specialty dummies removed	6.53**		5.02**		3.35*		1.32		5.62**	
F-statistic	3.39***		2.66**		3.47***		7.75***		2.80**	
Adjusted R^2	.09		.06		.09		.21		.07	
Mean of Dep. Var.	.12		.11		.65		.31		.04	

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*p<.05; **p<.01; ***p<.001

TABLE IV-10 (cont.)

Independent Variables	Counseling Coeff	Counseling (F)	Referral Coeff	Referral (F)
Constant	.35		-.11	
Physician Specialty:				
Family Practice	-.01	(.02)	-.04	(.95)
Pediatrics	-.16	(3.36)	.04	(.66)
Physician Characteristics:				
Age	-.01	(5.10)*	-.000	(.12)
Board Certification	.14	(5.60)*	.04	(1.47)
Solo Practice	-.01	(.06)	.05	(2.24)
Patient Characteristics:				
Age	-.000	(.01)	-.000	(.08)
Sex (male=0, female=1)	.05	(.88)	.05	(4.24)*
Multiple Conditions	.02	(.14)	.01	(.05)
Severity-Complexity	.01	(.06)	.06	(8.32)**
Urgency	.04	(1.53)	.01	(.15)
Encounter Characteristics:				
Office Visit	---		---	
Professional Referral	-.11	(1.17)	.03	(.28)
Number of Visits	-.001	(.33)	-.001	(1.84)
Joint F-statistics, specialty dummies removed	2.25		1.81	
F-statistic	1.81*		1.97*	
Adjusted R^2	.03		.04	
Mean of Dep. Var.	.24		.05	

---

*p<.05; **p<.01; ***p<.001

TABLE IV-11

REGRESSION COEFFICIENTS PREDICTING COMPONENTS OF CARE FOR TONSILLITIS AND PHARYNGITIS (ICDA-462, 463), FIRST VISITS IN OFFICE (N=2783)

Independent Variables	Chest X-ray		Laboratory Tests		Cultures		Systemic Drugs		Injection Other	
	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	-.001		-.02		.70		.39		-.15	
Physician Specialty:										
Family Practice	-.003	(.20)	-.02	(.84)	-.12	(7.89)**	.01	(.06)	.07	(5.10)*
Pediatrics	-.000	(.000)	-.07	(5.54)*	.18	(17.70)***	-.18	(19.31)***	.02	(2.95)
Physician Characteristics:										
Age	-.000	(.22)	.002	(9.96)**	-.01	(53.40)***	.002	(5.94)*	.002	(6.55)*
Board Certification	-.004	(.90)	.02	(2.38)	.04	(2.40)	.02	(.81)	-.02	(.93)
Solo Practice	.004	(1.64)	-.03	(7.35)**	-.05	(6.34)*	.02	(.92)	.02	(1.99)
Patient Characteristics:										
Age	.001	(14.57)***	.002	(8.00)**	.002	(3.01)	-.001	(1.62)	.000	(.07)
Sex (male=0, female=1)	-.01	(3.24)	-.001	(.003)	.01	(.14)	-.01	(.74)	-.02	(2.41)
Multiple Conditions	.01	(8.61)**	.06	(20.05)***	-.06	(6.89)**	.07	(10.33)**	-.01	(.54)
Severity-Complexity	.002	(1.17)	.02	(7.78)**	.02	(2.55)	.05	(15.56)***	.05	(34.73)***
Urgency	.001	(.05)	.002	(.05)	.01	(.22)	.08	(27.94)***	.04	(8.94)**
Encounter Characteristics:										
Office Visit	---		---		---		---		---	
Professional Referral	.02	(5.83)*	.02	(.31)	.13	(4.56)*	-.02	(.17)	-.02	(.15)
Number of Visits	---		---		---		---		---	
Joint F-statistics, specialty dummies removed	.33		4.74**		78.75***		36.75***		5.57**	
F-statistic	3.77***		6.74***		25.60***		13.44***		7.58***	
Adjusted R^2	.01		.02		.09		.05		.03	
Mean of Dep. Var.	.01		.10		.55		.70		.14	

---

*p<.05; **p<.01; ***p<.001

TABLE IV-11 (cont.)

	Referral	
Independent Variables	Coeff	(F)
Constant	-.27	
Physician Specialty:		
Family Practice	-.004	(.14)
Pediatrics	.01	(.63)
Physician Characteristics:		
Age	.000	(2.58)
Board Certification	-.000	(.000)
Solo Practice	-.000	(.01)
Patient Characteristics:		
Age	-.000	(.67)
Sex (male-0, female-1)	-.003	(.35)
Multiple Conditions	.03	(20.17)***
Severity-Complexity	.001	(.05)
Urgency	-.004	(.92)
Encounter Characteristics:		
Office Visit	---	
Professional Referral	.22	(194.09)***
Number of Visits	---	
Joint F-statistics, specialty dummies removed	2.22	
F-statistic	21.01***	
Adjusted R^2	.07	
Mean of Dep. Var.	.02	

---

*p<.05; **p<.01; ***p<.001

TABLE IV-12

REGRESSION COEFFICIENTS PREDICTING COMPONENTS OF CARE FOR COLDS AND URI (ICDA=460, 465), FIRST VISITS IN OFFICE (N=2630)

	Chest X-ray		Laboratory Tests		Cultures		Systemic Drugs		Injection Other	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	.03		-.07		.02		.64		-.14	
Physician Specialty:										
Family Practice	-.04	(20.86)***	.005	(.07)	-.01	(.52)	-.04	(2.37)	.10	(35.27)***
Pediatrics	-.04	(12.34)***	-.03	(1.55)	.08	(10.17)**	-.23	(53.71)***	.04	(3.42)
Physician Characteristics:										
Age	-.000	(.37)	.001	(3.58)	-.000	(.33)	.000	(.13)	.002	(14.33)***
Board Certification	-.01	(3.50)	-.003	(.06)	.03	(4.98)*	.06	(11.05)**	-.05	(15.47)***
Solo Practice	-.01	(4.56)*	-.04	(11.38)**	.02	(1.89)	.004	(.04)	.01	(1.20)
Patient Characteristics:										
Age	.001	(11.44)**	.000	(.95)	-.001	(5.57)*	-.000	(.44)	.001	(17.60)***
Sex (male=0, female=1)	.002	(.10)	.01	(.26)	.001	(.01)	-.001	(.001)	.003	(.09)
Multiple Conditions	.002	(.04)	.04	(8.69)**	-.01	(.16)	.06	(7.56)**	-.03	(3.57)
Severity-Complexity	.02	(11.16)**	.04	(14.62)***	.01	(1.83)	.02	(1.82)	.002	(.08)
Urgency	.004	(.85)	.03	(10.67)**	.03	(11.85)**	.04	(10.47)**	.03	(15.06)***
Encounter Characteristics:										
Office Visit	---		---		---		---		---	
Professional Referral	.01	(.11)	-.07	(2.57)	.02	(.24)	.004	(.004)	-.06	(2.15)
Number of Visits	---		---		---		---		---	
Joint F-statistics, specialty dummies removed	10.45***		2.31		15.38***		43.16***		24.61***	
F-statistic	7.97***		7.36***		8.68***		13.07***		13.25***	
Adjusted R^2	.03		.03		.03		.05		.05	
Mean of Dep. Var.	.03		.10		.14		.74		.08	

---

*p<.05; **p<.01; ***p<.001

TABLE IV-12 (cont.)

	Referral	
Independent Variables	Coeff	(F)
Constant	.01	
Physician Specialty:		
Family Practice	.01	(.66)
Pediatrics	.002	(.06)
Physician Characteristics:		
Age	.000	(.22)
Board Certification	-.001	(.08)
Solo Practice	.001	(.04)
Patient Characteristics:		
Age	-.000	(.49)
Sex (male=0, female=1)	-.003	(.43)
Multiple Conditions	.01	(6.22)*
Severity-Complexity	.01	(3.65)
Urgency	-.01	(5.62)*
Encounter Characteristics:		
Office Visit	---	
Professional Referral	.09	(31.77)***
Number of Visits	---	
Joint F-statistics, specialty dummies removed	.47	
F-statistic	4.46	
Adjusted R^2	.01	
Mean of Dep. Var.	.01	

---

*p<.05; **p<.01; ***p<.001

TABLE IV-13

REGRESSION COEFFICIENTS PREDICTING COMPONENTS OF CARE FOR LOW BACK PAIN (ICDA= 353, 725.1, 722, 728.5-728.9, 846, 847.8, 847.9), FIRST VISITS IN OFFICE (N=611)

	X-ray (non chest)				Counseling			
	A		B		A		B	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant			.10		.40		.41	
Physician Specialty								
Family Practice	-.05	(1.07)	---		.02	(.09)	---	
Orthopedic Surgeon	.36	(43.51)***	---		.01	(.04)	---	
Physician Characteristics:								
Age	.002	(.96)	.001	(.42)	-.003	(4.30)*	-.004	(4.50)*
Board Certification	.02	(.25)	.09	(3.25)	.04	(.70)	.04	(.78)
Solo Practice	-.01	(.08)	.001	(.001)	.000	(.000)	.001	(.001)
Patient Characteristics:								
Age	-.000	(.002)	-.001	(.63)	-.001	(.49)	-.001	(.58)
Sex (male=0, female=1)	-.09	(5.41)*	-.01	(7.00)**	.01	(.09)	.01	(.10)
Multiple Conditions	-.03	(.34)	-.09	(2.87)	.07	(1.95)	.07	(1.92)
Severity-Complexity	.09	(12.60)***	.14	(30.39)***	.07	(7.67)**	.07	(8.19)**
Urgency	.03	(1.52)	-.004	(.03)	-.01	(.13)	-.01	(.11)
Encounter Characteristics:								
Office Visit	---		---		---		---	
Professional Referral	-.08	(2.59)	.10	(3.88)*	-.16	(8.41)**	-.16	(9.96)**
Number of Visits	---		---		---		---	
Joint F-statistics, specialty dummies removed	41.22***		---		0.04		---	
F-statistic	13.77***		6.76***		1.96*		2.39*	
Adjusted R^2	.19		.08		.02		.02	
Mean of Dep. Var.	.43		.43		.35		.35	

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*p<.05, **p<.01, ***p<.001

TABLE IV-13 (continued)

Hospitalization

	A		B	
Independent Variables	Coeff	(F)	Cofff	(F)
Constant	-.03		-.04	
Physician Specialty				
Family Practice	-.01	(.12)	---	
Orthopedic Surgeon	-.01	(.44)	---	
Physician Characteristics:				
Age	.000	(.02)	.000	(.03)
Board Certification	-.01	(.30)	-.01	(.46)
Solo Practice	-.001	(.002)	-.001	(.01)
Patient Characteristics:				
Age	.000	(.37)	.000	(.54)
Sex (male=0, female=1)	.01	(.26)	.01	(.27)
Multiple Conditions	-.02	(1.43)	-.02	(1.20)
Severity-Complexity	.01	(.86)	.01	(.66)
Urgency	.01	(3.45)	.01	(3.75)
Encounter Characteristics:				
Office Visit	---		---	
Professional Referral	.04	(6.62)*	.04	(6.61)*
Number of Visits	---		---	
Joint F-statistics, specialty dummies removed	0.22		---	
F-statistic	1.33		1.58	
Adjusted R^2	.01		.01	
Mean of Dep. Var.	.02		.02	

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*p<.05, **p<.01, ***p<.001

TABLE IV-14

REGRESSION COEFFICIENTS PREDICTING COMPONENTS OF CARE FOR PNEUMONIA (ICDA=480-486), FOLLOW-UP VISITS IN HOSPITAL (N=767)

	Chest X-ray		Laboratory Tests		Cultures		Systemic Drugs		Injection Other	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	-.41		-.17		-.20		.32		-.39	
Physician Specialty										
Family Practice	-.03	(.52)	-.02	(.15)	-.15	(18.14)***	-.21	(21.50)***	-.001	(.001)
Pediatrics	-.16	(5.09)*	.03	(.18)	-.16	(8.53)**	-.23	(10.75)**	.10	(4.12)
Physician Characteristics:										
Age	.01	(18.57)***	.001	(.56)	.000	(.004)	.004	(4.57)*	.003	(6.88)**
Board Certification	-.06	(2.69)	-.01	(.15)	.01	(.27)	.03	(.52)	-.08	(9.01)**
Solo Practice	.01	(.07)	-.03	(.73)	.004	(.01)	.07	(2.76)	.07	(6.42)*
Patient Characteristics:										
Age	-.001	(1.99)	-.001	(.37)	-.001	(4.54)*	-.001	(.60)	.001	(2.30
Sex (male=0, female=1)	-.02	(.51)	-.02	(.56)	.01	(.12)	-.09	(6.27)*	-.07	(9.12)**
Multiple Conditions	-.05	(2.06	-.05	(1.68)	.05	(2.57)	.03	(.68)	-.000	(.000)
Severity-Complexity	.05	(2.59)	.12	(14.71)***	.09	(14.59)***	.10	(9.78)**	.08	(11.15)***
Urgency	.18	(48.06)***	.08	(11.29)**	.09	(18.13)***	.01	(.18)	.06	(10.63)**
Encounter Characteristics:										
Office Visit	---		---		---		---		---	
Professional Referral	.03	(.56)	.03	(.40)	.02	(.39)	-.10	(4.32)*	.03	(1.06)
Number of Visits	.000	(.003)	-.005	(4.27)*	-.001	(.30)	-.01	(5.28)*	.002	(1.62)
Joint F-statistics, specialty dummies removed	2.55		.26		10.22***		12.30***		2.37	
F-statistic	8.41***		4.38***		6.76***		6.12***		6.94	
Adjusted R^2	.10		.05		.08		.07		.09	
Mean of Dep. Var	.42		.30		.18		.57		.15	

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*p<.05, **p<.01, ***p<.001

TABLE IV-14 (cont.)

	Referral	
Independent Variables	Coeff	(F)
Constant	-.20	
Physician Specialty		
Family Practice	-.02	(.45)
Pediatrics	-.12	(7.76)**
Physician Characteristics:		
Age	-.000	(.09)
Board Certification	-.03	(2.09)
Solo Practice	-.01	(.11)
Patient Characteristics:		
Age	-.001	(3.88)*
Sex (male=0, female=1)	-.03	(1.89)
Multiple Conditions	.04	(2.54)
Severity-Complexity	.02	(.80)
Urgency	.10	(33.02)***
Encounter Characteristics:		
Office Visit	---	
Professional Referral	.16	(33.19)***
Number of Visits	.01	(20.61)***
Joint F-statistics, specialty dummies removed	5.42**	
F-statistic	9.65***	
Adjusted R^2	.12	
Mean of Dep. Var.	.12	

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*p<.05, **p<.01, ***p<.001

But the most striking finding visible in Tables IV-8 through IV-14 is the robustness of the relations between specialty and component of care delivery. Almost all the relations visible in the zero-order tables remain significant in the multiple regression equations. Specialty clearly plays an important role in the delivery of specific components of care, even after a wide range of control variables have explained all they can. Indeed, the joint f-test statistics comparing variance explained by equations with and without dichotomous variables representing specialty are significant in nearly every equation. The tendency of cardiologists to give fewer systemic drugs, for pediatricians to order cultures, for internists to use the laboratory, and the like, all remain in the multiple regression analysis as they appeared in the zero-order tables.

A similar set of equations reveals similar results in the prediction of average encounter time for the seven tracer conditions. Table IV-15 demonstrates differences by specialty membership in face-to-face encounter time in visits for all seven tracers. This table contains coefficients on specialty dummy variables representing the differences in encounter times from those of internists (the excluded category). In addition, the coefficients in this table have been abstracted from equations containing all the right-hand variables represented in Tables IV-8 through IV-14. The observed variance among specialties in encounter time, then, remains significant even after a wide range of variables representing the patient's condition, the physician's practice features, and the characteristics of the encounter have explained all they can.

Table IV-16 provides a final look at the determinants of encounter time. The coefficients in this table represent not only specialty membership, but components of care delivered during the encounter.

TABLE IV-15

COEFFICIENTS[1] FROM REGRESSION EQUATIONS INDICATING THE EFFECT OF SPECIALTY ON ENCOUNTER TIME IN SEVEN TRACER CONDITIONS

	All Encounters	First Visit in Office	Office Follow-up
Ischemic Heart Disease			
Family Practitioners	-4.43***	-7.15***	-5.18***
Cardiologists	.48	1.19	-.65
Mean Encounter Time (# of cases)	18.6 (4806)	24.2 (542)	16.9 (1884)
Essential Benign Hypertension			
Family Practitioners	-4.56***	-8.86***	-4.04***
Cardiologists	2.82**	5.10**	.44
Mean	15.1 (3985)	19.1 (838)	13.2 (2513)
Asthma			
Family Practitioners	-2.60*	-2.84	-4.66***
Pediatricians	-.73	-2.01	-3.74*
Mean	14.3 (875)	13.6 (259)	13.2 (298)
Nasopharyngitis and URI			
Family Practitioners	-2.26***	-2.39***	-4.37***
Pediatricians	-1.36***	-1.34***	-3.94***
Mean	9.7 (3406)	9.4 (2630)	10.4 (368)
Tonsillitis and Pharyngitis			
Family Practitioners	-.55	-1.73***	.27
Pediatricians	.42	-.57	-.02
Mean	9.0 (3424)	8.8 (2783)	8.8 (345)
Pneumonia			
Family Practitioners	-4.46***	-3.97***	-2.75**
Pediatricians	-4.06***	-5.34***	-2.02
Mean	12.0 (3086)	10.4 (1274)	10.3 (501)
Low Back Pain			
Family Practitioners	-4.26***	-6.60***	-3.56***
Orthopedic Surgeons	-3.03***	-1.96	-2.57**
Mean	13.3 (1961)	16.0 (611)	12.0 (638)

TABLE IV-15 (cont.)

[1] Numbers in tables (except means) are unstandardized partial regression coefficients from equations predicting the encounter times with patients with each tracer condition. Coefficients on dichotomous variables representing specialties reflect their differences from internal medicine, the variable representing this specialty having been omitted from the equations. In addition to variables representing specialty, these equations included physician age, board certification, practice mode (solo vs. other), patient age and sex, presence of comorbid conditions, severity, complexity, and urgency of case, place of visit (office vs. hospital), patient source (referral vs. self), and number of visits for this problem. Significance levels refer to those associated with each individual specialty variable.

TABLE IV-16

COEFFICIENTS FROM REGRESSION EQUATIONS INDICATING THE EFFECT OF COMPONENTS OF CARE ON ENCOUNTER TIME IN SEVEN TRACER CONDITIONS

	First Visit In Office	Office Followup Visits
Ischemic Heart Disease:		
Family Practice	-5.48**	-4.17***
Cardiology	-.29	-1.23*
Chest X-ray	9.45***	2.42***
Lab	1.86	1.51**
ECG	4.31**	3.90***
Systemic Drugs	-2.92*	-1.07*
Counseling	-.88	1.34**
Mean Encounter Time (# of cases)	24.15 (542)	16.89 (1884)
Essential Benign Hypertension		
Family Practice	-5.16***	-2.88***
Cardiology	4.07**	-.01
Chest X-ray	9.73***	4.30***
Lab	4.58***	1.85***
ECG	8.00***	6.79***
Systemic Drugs	-3.15***	-1.12***
Counseling	-.61	.43
Mean Encounter Time (# of cases)	19.14 (938)	13.23 (2513)
Nasopharyngitis and URI		
Family Practice	-2.27***	-3.80***
Pediatrics	-1.35***	-3.56**
Chest X-ray	2.07***	4.06*
Lab	1.37***	.86
Systemic Drugs	-.40*	-.30
Injections	-.47	-1.55
Cultures	.75**	2.56
Mean Encounter Time (# of cases)	9.40 (2630)	10.39 (368)
Pharyngitis and Tonsillitis		
Family Practice	-1.56***	.37
Pediatrics	-.58	.08
Chest X-ray	4.62***	-.96
Lab	1.27***	.63
Systemic Drugs	-.22	-.29
Injections	-1.03***	-.63
Cultures	.43**	.23
Mean Encounter Time (# of cases)	8.75 (2783)	8.77 (345)

TABLE IV-16 (continued)

	First Visit In Office	Office Followup Visits
Pneumonia		
Family Practice	-3.63***	-2.27*
Pediatrics	-4.31***	-1.39
Chest X-ray	2.24***	1.24*
Lab	1.26**	-.10
Systemic Drugs	-.11	.42
Injections	-.45	-1.47
Cultures	.97*	1.21
Mean Encounter Time (# of cases)	10.36 (1274)	10.30 (501)
Asthma		
Family Practice	-3.15	-3.43*
Pediatrics	-.65	-1.43
Chest X-ray	1.05	4.57**
Lab	1.25	2.12
Systemic Drugs	-2.22	1.38
Injections	.09	.34
Counseling	-.26	2.03
Pulmonary Function	22.54***	2.40
Mean Encounter Time (# of cases)	13.64 (259)	13.23 (298)
Lower Back Pain		
Family Practice	-6.53***	-3.12**
Orthopedic Surgery	-2.68*	-2.44*
X-ray other than chest	1.93*	2.91***
Counseling	1.83*	-.15
Mean Encounter Time (# of cases)	16.00 (611)	12.03 (638)
Pneumonia (Hospital Visits)		
Family Practice	-11.47**	-3.97**
Pediatrics	-11.93*	-4.99*
X-ray	2.82	.99
Lab	-3.63	3.35*
Systemic Drugs	-2.53	-1.11
Injections	5.63	.08
Cultures	7.28*	3.66*
Mean Encounter Time (# of cases)	18.89 (255)	12.52 (767)

Again, these coefficients apply to variables in equations containing all the control variables included in Tables IV-8 through IV-15. The table contains an important clue to the causes of variance in encounter time, a major correlate of productivity identified in Chapter III. Components of care contribute significantly to encounter time. Generally, physicians and specialties that take more time in encounters for the seven tracer conditions seem to do so, in part, because they provide more components of care. Thus, the "product" of the internist, containing more components of care than the family practitioner, may take longer to deliver, and thus restrain the internist from seeing as many patients per week as the family practitioner.

Still, Table IV-16 does not explain the interspecialty variation in encounter time completely on the basis of components of care. Variables representing specialty remain significant in these equations, generally in the same direction as they appear in the other regression results presented in this chapter. Apparently, factors other than the components of care included in the equations account for much of the variation in encounter time. These could, of course, be components of care not entered in the equations or not covered in the response options on the USC log diaries. But they could well be simply unmeasured features of specialty membership which are difficult, or perhaps impossible, to specify.

In general, then, a very consistent set of statistics in this chapter contradict the null hypothesis. Within the limits of the USC data, specialty indeed has an independent impact on practice patterns. While the product associated with each specialty's treatment of the seven tracer conditions explains part of the variation in encounter time, specialty membership still has a significant effect on both components of care and encounter time. This is true even after a wide range of control variables--including variables representing intensity of effort likely to be involved in each case--have explained all they can.

CHAPTER V

GEOGRAPHIC FACTORS IN SERVICE DELIVERY

Geographic factors have played among the most visible roles in health policy in recent years. The convictions that numerous localities within the United States suffer from inadequate supplies of health manpower, and that an undersupply of health manpower materially limits availability of services, have guided the thinking of many policymakers. Legislators have instituted programs such as the National Health Service Corps to subsidize the temporary location of physicians in rural areas. The Health Resources Administration has designated counties and parts of counties throughout the United States as manpower shortage areas, qualifying them as sites for Health Service Corps personnel. But health service researchers have carried out few conclusive investigations of the differences between service delivery in rural versus urban places, or between places designated as shortage areas and those adequately suppplied with health manpower. By comparing physician activity in several types of locales, this chapter provides a perspective in which policymakers can reexamine the appropriateness of present programs designed to assure adequate medical services throughout the United States.

Among counties in the United States, striking disparities exist in the ratio of physicians to population. But these disparities do not necessarily translate into deficiencies of service. Where deficiencies do exist, these may result from the training and organization of physicians as easily as their simple scarcity. A large body of research already exists on the access of rural populations to physicians. But this research does not address the variations in productivity among localities which may determine access, or the variations in actual service delivered which occur due to geographic influences.

In view of the costs of training and placing physicians in shortage areas, policymakers must understand the actual impact of geographic factors on the services of physicians. Physicians in scarcity areas may, for example, compensate for the lack of alternative medical resources for their patients. They may work longer hours. They may spend shorter periods of time in encounters with patients. They may deliver different mixtures of services to their patients than in areas where physicians are in greater abundance.

Planners and policymakers, furthermore, may be overestimating the importance of particular dimensions of geographic distribution. Having concentrated mainly on comparing rural versus urban places, or officially designated shortage counties versus "nondesignated" ones, they may have overlooked the role of regional variations in health care delivery. This chapter weighs the relative importance of regional and county-level considerations in the determination of actual health care services delivered.

Methods

This chapter explores the effects of geographic factors on physician service delivery using essentially the same methods as Chapters III and IV. Because of its specific empirical focus, though, the methodology requires several minor modifications. Like the contingency tables in the body of Chapter IV, those in Chapter V have been computed on the basis of a weighting system compensating for the differing sampling ratios utilized for each of the five USC sampling strata. While statistics in the appendix to Chapter IV are based entirely on unweighted data, those in the present chapter's appendix are weighted. This adjustment is necessary for the present analysis, since the factors on which USC's sampling strata are based (group, solo, partnership, institutional, and "other" practice arrangements) are known to vary among regions and counties. Multiple regression statistics, though, are computed as in the earlier chapters. Because the equations contain controls for these strata factors, further weighting of the data is unnecessary.

This chapter organizes its comparisons along several dimensions. It compares physicians practicing in the four major geographical regions of the United States: the Northeast, North Central, South, and West. While these distinctions are frequently cited in geographic comparisons, they are not necessarily the best means of performing such analyses. Regional comparisons which include finer distinctions or which base their divisions on market areas instead of these political entities may better capture the influences which produce differential practice patterns. This chapter compares services delivered in Standard Metropolitan Statistical Areas (SMSAs) with those in non-SMSAs to estimate urban versus rural distinctions. Yet this SMSA definition is only a gross measure of rural versus urban distinctions and does not compensate for degrees of urbanism.

The scheme designating counties as Health Manpower Shortage Areas (HMSAs) is particularly problematical. While the HMSA designation, like those of region and SMSA, is widely discussed in the literature and conveniently included in the ARF, it is not universally regarded as a meaningful distinction among counties in terms of the availability of service. In addition, the HMSA code includes a category of "partial designation," naming some counties as having parts which have shortages of health personnel and parts which are adequately served. The designation scheme does not allow researchers to easily distinguish between physicians in the USC file practicing in shortage and nonshortage areas within partially designated counties. (Physician zip codes would have to be matched with enumerated shortage parts of counties, a complicated procedure not within the scope of this project.)

A last distinction of this chapter's methodology from those of preceding chapters is the inclusion of interaction effects in its analysis. While previous chapters have relied heavily on direct, linear relations among variables, this approach appears less appropriate for analysis of geographic factors. Regional factors often reflect sectional peculiarities and historical accidents. The history of a region or unique features of medical practice within it may affect service delivery in a specific place--viz., rural or HMSA-designated counties--in unanticipated ways. Contingency tables with appropriate controls allow more direct observation of these phenomena than zero-order tables or multiple linear regression analysis.

Despite these differences, the present chapter follows directly from Chapters III and IV. Regression models presented here, for example, contain the same independent variables as those predicting practice patterns in Chapter IV. In the present chapter, variables representing geographic factors have been added to the right-hand side of the equations, thus showing the additive effects of features of the counties in which each physician practices.

Findings

Components of Care

Tables V-1 through V-7 (and the corresponding A and B tables in Appendix V) present multiple regression coefficients from equations predicting delivery of specific components of care during visits for the seven standard tracer conditions. The equations presented in this chapter contain all independent variables presented in Chapter IV's equations: physician characteristics, such as specialty, board certification, and practice organization (solo versus other); patient characteristics, such as age, sex, presence of comorbidity, and measures of severity; and encounter characteristics, such as source (professional versus self-referral), site, and number of visits for this problem. In addition, these equations contain measures of region and SMSA versus non-SMSA location.

The findings reported in Chapter IV showed many significant correlates of service delivery, with specialty membership having a particularly strong and consistent relationship. The results in this chapter reveal patterns of activity along geographic lines. These patterns are, however, complex and not as consistent as those found along specialty lines. Covering more diverse issues than encounter time, labor supply, or productivity, the analysis of components of care best illustrates the difficulty of modelling the relation between geography and the practice of medicine.

In general, geographic features contribute significantly to the variance explained. This is true for almost all components of care and almost all tracer conditions. Notable exceptions in Tables V-1 through V-7 include referrals for hypertension, asthma, tonsillitis and pharyngitis, nasopharyngitis and URI, and low back pain. Further, the geographic measures contribute little to the variance explained in delivery of electrocardiograms for heart disease, laboratory tests and

TABLE V-1

COEFFICIENTS FROM REGRESSION EQUATIONS PREDICTING COMPONENTS OF CARE FOR ESSENTIAL BENIGN HYPERTENSION (ICDA=401), INCLUDING GEOGRAPHIC VARIABLES, FOLLOW-UP VISITS IN OFFICE (N=2513)

	Chest X-ray		Laboratory Tests		Counseling		Systemic Drugs		Electro-Cardiogram	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	.08		.11		.36		.37		.61	
Physician Specialty:										
Family Practice	-.09	(48.81)***	-.07	(12.33)***	-.02	(1.25)	-.05	(5.74)*	-.10	(54.22)***
Cardiology	-.01	(.51)	.01	(.10)	.01	(.21)	-.19	(42.70)***	.04	(4.54)*
Physician Characteristics:										
Age	-.001	(1.61)	.000	(.10)	-.003	(10.18)***	.002	(5.00)*	-.001	(2.43)
Board Certification	-.03	(4.66)*	.001	(.01)	-.06	(9.06)**	-.03	(2.70)	-.03	(4.48)*
Solo Practice	-.01	(1.11)	-.01	(.12)	.02	(1.17)	.01	(.15)	-.001	(.01)
Patient Characteristics:										
Age	.000	(.48)	-.000	(.35)	-.002	(12.01)***	.000	(.37)	.000	(.37)
Sex (male=0, female=1)	-.02	(4.43)*	-.02	(1.74)	.003	(.03)	.04	(4.56)*	-.03	(3.86)*
Multiple Conditions	.02	(4.01)*	.12	(45.59)***	.11	(40.37)***	.01	(.14)	.02	(1.55)
Severity-Complexity	.04	(28.79)***	.07	(32.60)***	.04	(12.24)***	.03	(6.62)**	.05	(36.55)***
Urgency	-.01	(1.52)	-.01	(1.44)	.03	(4.91)*	.04	(11.32)***	-.004	(.18)
Encounter Characteristics:										
Office Visit	---		---		---		---		---	
Professional Referral	-.01	(.34)	.01	(.19)	.01	(2.35)	-.04	(1.77)	.003	(.02)
Number of Visits	-.001	(5.37)*	-.000	(.51)	-.001	(6.10)*	.001	(1.61)	-.001	(1.77)
Geographical Characteristics:										
Northeast Region	-.01	(.60)	-.03	(1.22)	.05	(3.70)	.12	(19.29)***	.02	(1.36)
North Central Region	.03	(3.20)	.05	(4.83)*	-.02	(.80)	.09	(12.91)***	.04	(4.98)*
South Region	.03	(3.70)	.07	(8.34)**	-.01	(.30)	.12	(20.51)***	.05	(6.32)*
SMSA Status	.02	(3.08)	-.01	(.17)	-.003	(.02)	.03	(2.28)	.04	(5.16)*
Joint F-statistics, geographic dummies removed	3.08*		2.49*		2.44*		7.18***		2.93*	
F-statistic	8.36***		7.79***		9.72***		8.66***		10.54***	
Adjusted R^2	.04		.04		.05		.05		.06	
Mean of Dep. Var.	.08		.25		.24		.71		.11	

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*p<.05; **p<.01; ***p<.001

TABLE V-1 (cont.)

	Referral	
Independent Variables	Coeff	(F)
Constant	.37	
Physician Specialty:		
Family Practice	-.02	(4.52)*
Cardiology	.02	(3.43)
Physician Characteristics:		
Age	-.000	(.004)
Board Certification	.01	(.47)
Solo Practice	-.004	(.25)
Patient Characteristics:		
Age	-.000	(2.12)
Sex (male=0, female=1)	.004	(.32)
Multiple Conditions	.04	(26.71)***
Severity-Complexity	.002	(.36)
Urgency	.001	(.03)
Encounter Characteristics:		
Office Visit	---	
Professional Referral	.02	(5.59)*
Number of Visits	-.000	(1.73)
Geographic Characteristics:		
Northeast Region	-.004	(.15)
North Central Region	-.001	(.01)
South Region	-.02	(2.83)
SMSA Status	-.002	(.07)
Joint F-statistics, geographic dummies removed	.97	
F-statistic	4.15***	
Adjusted R^2	.02	
Mean of Dep. Var.	.03	

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*p<.05; **p<.01; ***p<.001

TABLE V-2

COEFFICIENTS FROM REGRESSION EQUATIONS PREDICTING COMPONENTS OF CARE FOR ISCHEMIC HEART DISEASE (ICDA-412, 413), INCLUDING GEOGRAPHIC VARIABLES, FOLLOW-UP VISITS IN OFFICE (N=1884)

	Chest X-ray		Laboratory Tests		Counseling		Systemic Drugs		Electro-Cardiogram	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	-.19		-.24		.08		.40		.06	
Physician Specialty:										
Family Practice	-.08	(13.40)***	-.13	(16.85)***	-.03	(.74)	-.01	(.18)	-.16	(24.80)***
Cardiology	.001	(.01)	-.07	(8.15)**	-.01	(.35)	-.23	(73.11)***	.11	(19.22)***
Physician Characteristics:										
Age	.001	(1.72)	.004	(11.90)***	.001	(.42)	-.000	(.08)	.002	(3.18)
Board Certification	-.000	(.001)	.03	(1.31)	-.04	(4.01)*	-.15	(40.22)***	-.004	(.03)
Solo Practice	.003	(.02)	.09	(12.64)***	-.03	(1.52)	.06	(5.58)*	.06	(5.07)*
Patient Characteristics:										
Age	.001	(1.04)	.000	(.000)	-.002	(5.71)*	.000	(.17)	-.002	(7.11)**
Sex (male=0, female=1)	-.02	(2.06)	.03	(2.06)	-.01	(.19)	.02	(1.21)	-.02	(.67)
Multiple Conditions	-.01	(.15)	.08	(12.52)***	.07	(12.06)***	.05	(4.06)*	-.04	(3.47)
Severity-Complexity	.09	(68.44)***	.08	(27.01)***	.07	(22.71)***	.04	(5.28)*	.12	(69.38)***
Urgency	.01	(1.52)	.03	(7.05)***	.03	(6.75)**	.05	(15.09)***	.03	(4.12)*
Encounter Characteristics:										
Office Visit	---		---		---		---		---	
Professional Referral	.04	(3.45)	-.01	(.25)	.03	(1.23)	.02	(.35)	.04	(1.60)
Number of Visits	-.001	(4.87)*	.000	(.25)	-.000	(.61)	.000	(.72)	-.001	(7.56)**
Geographic Characteristics:										
Northeast Region	-.03	(1.83)	.02	(.27)	.05	(2.97)	.11	(10.57)***	.05	(2.59)
North Central Region	.04	(3.26)	.04	(1.45)	.000	(.000)	.05	(2.50)	.03	(.81)
South Region	.05	(5.71)*	.10	(11.24)***	.05	(3.54)	.14	(18.10)***	.05	(3.12)
SMSA Status	.05	(7.74)**	.03	(1.15)	.04	(2.85)	.06	(5.06)*	.05	(3.37)
Joint F-statistics, geographic dummies removed	6.88***		3.94**		2.45*		6.39***		1.72	
F-statistic	9.59***		8.31***		5.54***		11.24***		17.59***	
Adjusted R^2	.07		.06		.04		.08		.12	
Mean of Dep. Var.	.12		.29		.24		.62		.35	

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*p<.05; **p<.01; ***p<.001

TABLE V-2 (cont.)

	Referral	
Independent Variables	Coeff	(F)
Constant	.14	
Physician Specialty:		
Family Practice	.02	(1.17)
Cardiology	.01	(.26)
Physician Characteristics:		
Age	-.01	(2.74)
Board Certification	-.003	(.06)
Solo Practice	-.02	(1.40)
Patient Characteristics:		
Age	-.002	(8.47)**
Sex (male=0, female=1)	-.01	(.52)
Multiple Conditions	-.01	(.46)
Severity-Complexity	.04	(18.80)***
Urgency	.01	(.47)
Encounter Characteristics:		
Office Visit	---	
Professional Referral	.10	(34.43)***
Number of Visits	-.001	(4.39)*
Geographic Characteristics:		
Northeast Region	.01	(.42)
North Central Region	-.01	(.44)
South Region	-.03	(3.35)
SMSA Status	.02	(2.24)
Joint F-statistics, geographic dummies removed	2.64**	
F-statistic	8.09***	
Adjusted R^2	.06	
Mean of Dep. Var.	.07	

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*p<.05; **p<.01; ***p<.001

TABLE V-3

COEFFICIENTS FROM REGRESSION EQUATIONS PREDICTING COMPONENTS OF CARE FOR ASTHMA (ICDA = 493), INCLUDING GEOGRAPHIC VARIABLES, FOLLOWUP VISITS IN OFFICE (N = 298)

	Chest X-ray		Laboratory Tests		Pulmonary Function		Systemic Drugs		Injection Other	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	.24		.13		.12		.69		-.40	
Physician Specialty:										
Family Practice	-.10	(3.44)	-.13	(6.78)**	-.04	(1.95)	-.19	(6.28)*	.08	(1.34)
Pediatrics	-.21	(9.75)**	-.20	(10.07**	-.13	(10.29)***	-.13	(2.05)	.14	(2.56)
Physician Characteristics:										
Age	-.001	(.17)	.001	(.25)	.000	(.02)	-.01	(9.98)**	.003	(1.49)
Board Certification	-.08	(3.33)	-.003	(006)	.02	(.71)	.17	(8.50)**	.05	(.83)
Solo Practice	-.06	(1.73)	-.04	(.73)	-.04	(2.50)	.14	(4.39)*	.05	(.80)
Patient Characteristics:										
Age	-.002	(3.17)	-.001	(.90)	-.001	(1.43)	.002	(2.11)	-.002	(2.53)
Sex (male=0, female=1)	-.02	(.32)	-.05	(1.65)	-.03	(1.47)	.02	(.15)	-.07	(2.13)
Multiple Conditions	.03	(.40)	.04	(.99)	-.01	(.36)	.000	(.000)	.06	(1.26)
Severity-Complexity	.02	(.58)	.07	(6.32)*	.01	(.08)	.01	(.08)	-.02	(.17)
Urgency	.005	(.05)	-.005	(.05)	.01	(.78)	.07	(4.47)*	.17	(32.09)***
Encounter Characteristics:										
Office Visit	---		---		---		---		---	
Professional Referral	.12	(2.64)	.04	(.37).	.13	(7.59)**	.08	(.52)	-.09	(.83)
Number of Visits	-.002	(3.42)	.001	(.45)	-.001	(.91)	-.002	(1.55)	.01	(22.20)***
Geographic Characteristics:										
Northeast Region	-.11	(4.18)	-.07	(1.77)	-.05	(2.33)	-.30	(15.30)***	.17	(5.46)*
North Central Region	.06	(1.27)	-.05	(.74)	-.07	(3.74)	.04	(.23)	.01	(.01)
South Region	-.04	(.64)	.04	(.61)	.08	(8.29)**	.13	(3.86)	-.05	(.56)
SMSA Status	.07	(2.71)	-.03	(.60)	.03	(1.21)	.05	(.83)	.04	(.44)
Joint F-statistics, geographic dummies removed	2.55*		1.62		2.53*		8.69***		2.97*	
F-statistic	3.23***		2.42**		2.78***		5.06***		6.71***	
Adjusted R^2	.11		.07		.09		.18		.24	
Mean of Dep. Var.	.12		.11		.04		.65		.31	

$^*p<.05$; $^{**}p<.01$; $^{***}p<.001$

TABLE V-3 (cont.)

	Referral		Counseling	
Independent Variables	Coeff	(F)	Coeff	(F)
Constant	-.06		.39	
Physician Specialty:				
Family Practice	-.03	(.89)	-.02	(.06)
Pediatrics	.03	(.58)	-.17	(3.50)
Physician Characteristics:				
Age	-.000	(.02)	-.01	(3.95)*
Board Certification	.03	(1.26)	.14	(5.58)*
Solo Practice	.04	(1.80)	.02	(.08)
Patient Characteristics:				
Age	-.000	(.25)	-.000	(.03)
Sex (male=0, female=1)	.05	(4.18)*	.04	(.48)
Multiple Conditions	.01	(.07)	.02	(.16)
Severity-Complexity	.06	(7.82)**	.005	(.01)
Urgency	.01	(.27)	.04	(1.41)
Encounter Characteristics:				
Office Visit	---		---	
Professional Referral	.02	(.09)	-.11	(1.07)
Number of Visits	-.001	(1.75)	-.001	(.25)
Geographic Characteristics:				
Northeast Region	-.03	(.57)	-.09	(1.58)
North Central Region	-.02	(.39)	-.02	(.06)
South Region	-.07	(4.75)*	.03	(.18)
SMSA Status	-.04	(1.72)	-.04	(.56)
Joint F-statistics, geographic dummies removed	1.64		1.06	
F-statistic	1.90*		1.62	
Adjusted R^2	.05		.03	
Mean of Dep. Var.	.05		.24	

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*p<.05; **p<.01; ***p<.001

TABLE V-4

COEFFICIENTS FROM REGRESSION EQUATIONS PREDICTING COMPONENTS OF CARE FOR TONSILLITIS AND PHARYNGITIS (ICDA-462 AND 463), INCLUDING GEOGRAPHIC VARIABLES, FIRST VISITS IN OFFICE (N-2783)

	Chest X-ray		Laboratory Tests		Cultures		Systemic Drugs		Injection Other	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	-.01		-.05		.77		.44		-.19	
Physician Specialty:										
Family Practice	-.002	(.13)	-.03	(1.22)	-.10	(5.99)*	-.01	(.10)	.05	(3.22)
Pediatrics	.003	(.12)	-.06	(4.42)*	.18	(17.25)***	-.19	(20.39)**	-.01	(.16)
Physician Characteristics:										
Age	-.000	(.26)	.002	(9.08)**	-.01	(53.80)***	.002	(7.16)**	.002	(6.64)*
Board Certification	-.004	(1.02)	.03	(2.99)	.03	(2.01)	.02	(.90)	-.01	(.55)
Solo Practice	.003	(.80)	-.03	(5.11)*	-.05	(5.97)*	.01	(.32)	.03	(3.68)
Patient Characteristics:										
Age	.001	(16.29)***	.002	(9.96)**	.001	(1.59)	-.001	(.92)	.000	(.05)
Sex (male-0, female-1)	-.01	(3.26)	-.002	(.03)	.01	(.28)	-.01	(.75)	-.02	(3.11)
Multiple Conditions	.01	(8.21)**	.06	(19.74)***	-.06	(7.20)**	.07	(9.8)**	-.01	(.16)
Severity-Complexity	.003	(1.61)	.02	(6.79)**	.02	(3.81)*	.04	(14.26)***	.05	(25.8)***
Urgency	.001	(.05)	.002	(.05)	.01	(.20)	.08	(26.63)***	.04	(10.14)**
Encounter Characteristics:										
Office Visit	---		---		---		---		---	
Professional Referral	.03	(6.89)**	.02	(.35)	.13	(4.54)*	-.02	(.11)	-.04	(.06)
Number of Visits	---		---		---		---		---	
Geographic Characteristics:										
Northeast Region	.02	(10.54)**	-.003	(.03)	-.07	(5.71)*	.01	(.21)	-.07	(9.10)**
North Central Region	.01	(6.00)*	.07	(16.08)***	-.13	(21.61)***	-.01	(.06)	-.01	(.39)
South Region	.004	(.97)	.06	(15.82)***	-.16	(43.52)***	.05	(4.06)*	.10	(34.28)***
SMSA Status	-.005	(1.56)	-.02	(2.78)	.04	(3.69)	-.08	(14.18)***	.04	(6.74)*
Joint F-statistics, geographic dummies removed	3.81**		9.26***		13.54***		5.56***		25.33***	
F-statistic	3.79***		7.47***		22.73***		11.40***		12.51***	
Adjusted R^2	.01		.03		.10		.05		.06	
Mean of Dep. Var.	.01		.10		.55		.70		.14	

*p .05, **p .01, ***p .001

TABLE V-4 (cont.)

	Referral	
Independent Variables	Coeff	(F)
Constant	-.01	
Physician Specialty:		
Family Practice	-.004	(.14)
Pediatrics	.01	(.49)
Physician Characteristics:		
Age	.000	(2.51)
Board Certification	-.000	(.003)
Solo Practice	-.001	(.06)
Patient Characteristics:		
Age	-.000	(.67)
Sex (male=0, female=1)	-.003	(.35)
Multiple Conditions	.03	(20.50)***
Severity-Complexity	.001	(.04)
Urgency	-.004	(.87)
Encounter Characteristics:		
Office Visit	---	
Professional Referral	.22	(192.56)***
Number of Visits	---	
Geographic Characteristics:		
Northeast Region	.01	(.76)
North Central Region	-.001	(.04)
South Region	.002	(.11)
SMSA Status	.002	(.18)
Joint F-statistics, geographic dummies removed	.39	
F-statistic	15.50***	
Adjusted R^2	.07	
Mean of Dep. Var.	.02	

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*p<.05; **p<.01; ***p<.001

TABLE V-5

COEFFICIENTS FROM REGRESSION EQUATIONS PREDICTING COMPONENTS TO CARE FOR NASOPHARYNGITIS & URI (ICDA 460 & 465) INCLUDING GEOGRAPHIC VARIABLES, FIRST VISITS IN OFFICE (N=2630)

	Chest X-ray		Laboratory Tests		Cultures		Systemic Drugs		Injection Other	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	.02		-.10		-.01		.65		-.12	
Physician Specialty:										
Family Practice	-.04	(18.18)***	.001	(.01)	-.002	(.01)	-.05	(4.16)*	.09	(34.27)***
Pediatrics	-.04	(10.24)***	-.02	(.94)	.09	(12.17)***	-.23	(54.21)***	.04	(3.53)
Physician Characteristics:										
Age	.000	(.35)	.001	(3.49)	-.000	(.30)	.000	(.08)	.002	(14.72)***
Board Certification	-.01	(3.20)	-.003	(.04)	.03	(5.06)*	.06	(10.40)***	-.04	(13.42)***
Solo Practice	-.01	(2.76)	-.04	(8.59)**	.02	(2.12)	-.001	(.68)	.02	(3.28)
Patient Characteristics:										
Age	.001	(11.83)***	.000	(1.14)	-.001	(5.44)*	-.000	(.38)	.001	(17.92)***
Sex (male=0, female=1)	.003	(.17)	.01	(.29)	.002	(.30)	-.002	(.20)	.004	(.16)
Multiple Conditions	.002	(.07)	.05	(8.98)**	-.01	(.87)	.06	(7.34)	-.03	(3.67)*
Severity-Complexity	.02	(12.79)***	.04	(15.90)***	.02	(2.18)	.02	(1.38)	.01	(.32)
Urgency	.004	(.61)	.02	(8.24)**	.04	(13.27)***	.04	(8.94)**	.03	(13.82)***
Encounter Characteristics:										
Office Visit	---		---		---		---		---	
Professional Referral	.01	(.10)	-.06	(2.17)	.02	(.18)	.02	(.07)	-.06	(2.62)
Number of Visits	---		---		---		---		---	
Geographic Characteristics:										
Northeast Region	-.002	(.05)	-.000	(.46)	.04	(3.35)	.04	(1.52)	-.09	(22.20)***
North Central Region	.03	(8.32)**	.06	(11.81)***	.05	(6.98)**	.02	(.58)	-.03	(3.20)
South Region	.001	(.89)	.04	(6.47)**	-.03	(2.47)	.08	(9.72)**	-.03	(5.04)*
SMSA Status	.01	(1.38)	.01	(.19)	.01	(.78)	-.03	(1.70)	.01	(.48)
Joint F-statistics, geographic dummies removed	3.97**		4.40**		7.92***		3.67**		5.70***	
F-statistic	6.93***		6.60***		8.55***		10.60***		11.30***	
Adjusted R^2	.03		.03		.04		.05		.06	
Mean of Dep. Var.	.03		.10		.14		.74		.08	

---

*p<.05, **p<.01, ***p<.001

TABLE V-5 (cont.)

	Referral	
Independent Variables	Coeff	(F)
Constant	.01	
Physician Specialty:		
Family Practice	.01	(.98)
Pediatrics	.002	(.07)
Physician Characteristics:		
Age	.000	(.23)
Board Certification	-.002	(.12)
Solo Practice	.000	(.58)
Patient Characteristics:		
Age	-.000	(.52)
Sex (male=0, female=1)	-.003	(.43)
Multiple Conditions	.01	(6.36)**
Severity-Complexity	.01	(3.48)
Urgency	-.01	(5.00)*
Encounter Characteristics:		
Office Visit	---	
Professional Referral	.09	(31.57)***
Number of Visits	---	
Geographic Characteristics:		
Northeast Region	.01	(1.98)
North Central Region	.004	(.47)
South Region	-.000	(.39)
SMSA Status	.002	(.99)
Joint F-statistics, geographic dummies removed	.90	
F-statistic	3.51***	
Adjusted R^2	.01	
Mean of Dep. Var.	.01	

*p<.05, **p<.01, ***p<.001

TABLE V-6

COEFFICIENT FROM REGRESSION EQUATIONS PREDICTING COMPONENTS OF CARE FOR LOW BACK PAIN (ICDA=VARIOUS), INCLUDING GEOGRAPHIC VARIABLES, FIRST VISITS IN OFFICE (N=611)

	X-ray (Other Than Chest)		Counseling		Hospital-ization		Referral	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	.03		.29		.004		-.08	
Physician Specialty:								
Family Practice	-.04	(.62)	.03	(.32)	-.02	(1.36)	-.05	(1.49)
Orthopedics	.38	(46.43)***	.01	(.01)	-.02	(.82)	.02	(.20)
Physician Characteristics:								
Age	.002	(.67)	-.004	(4.80)*	.000	(.20)	.004	(10.27)***
Board Certification	.04	(.57)	.04	(.79)	-.01	(.65)	.03	(.72)
Solo Practice	-.02	(.14)	.002	(.003)	-.002	(.02)	-.03	(1.42)
Patient Characteristics:								
Age	-.000	(.001)	-.001	(.31)	.000	(.98)	-.000	(.03)
Sex (male=0, female=1)	-.07	(5.23)*	.003	(.01)	.01	(.31)	-.02	(.38)
Multiple Conditions	-.03	(.36)	.07	(1.78)	-.02	(1.40)	.05	(2.12)
Severity-Complexity	.09	(13.14)***	.07	(7.84)**	.01	(1.11)	.02	(.86)
Urgency	.03	(1.68)	-.01	(.33)	.01	(2.89)	-.03	(3.69)
Encounter Characteristics:								
Office Visit	---		---		---		---	
Professional Referral	-.09	(3.23)	-.14	(6.88)**	.04	(6.20)*	.18	(24.33)***
Number of Visits	---		---		---		---	
Geographic Characteristics:								
Northeast Region	.01	(.20)	.14	(4.55)*	-.004	(.04)	.06	(1.74)
North Central Region	.05	(.73)	.04	(.58)	-.01	(.18)	-.003	(.11)
South Region	-.06	(1.56)	.10	(3.73)*	.02	(1.72)	.01	(.35)
SMSA Status	-.04	(.61)	.08	(2.60)	-.05	(8.65)**	.02	(.33)
Joint F-statistics, geographic dummies removed	1.32		2.25		3.27*		.69	
F-statistic	10.47***		2.05**		1.86**		5.16	
Adjusted R^2	.19		.03		.02		.09	
Mean of Dep. Var.	.43		.35		.23		.13	

---

*p<.05, **p<.01, ***p<.001

TABLE V-7

COEFFICIENTS FROM REGRESSION EQUATIONS PREDICTING COMPONENTS OF CARE FOR PNEUMONIA (ICDA-480-486), INCLUDING GEOGRAPHIC VARIABLES, FOLLOWUP VISITS IN HOSPITAL (N=707)

	Chest X-ray		Laboratory Tests		Cultures		Systemic Drugs		Injection Other	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	-.46		-.22		-.29		.17		-.46	
Physician Specialty:										
Family Practice	-.02	(.20)	-.02	(.14)	-.13	(12.55)***	-.18	(15.42)***	.01	(.11)
Pediatrics	-.15	(4.74)*	.04	(.30)	-.16	(8.50)**	-.23	(10.27)***	.10	(3.71)
Physician Characteristics:										
Age	.01	(17.64)***	.001	(.30)	-.000	(.001)	.003	(3.67)*	.003	(6.14)**
Board Certification	-.06	(2.54)	-.004	(.01)	.01	(.06)	.02	(.33)	-.08	(9.92)**
Solo Practice	.02	(.22)	-.02	(.26)	.01	(.06)	.08	(3.78)*	.08	(6.98)**
Patient Characteristics:										
Age	-.001	(1.86)	-.000	(.24)	-.001	(3.95)*	-.000	(.29)	.001	(2.81)
Sex (male=0, female=1)	-.02	(.33)	-.03	(.73)	.02	(.66)	-.07	(4.45)*	-.06	(6.61)**
Multiple Conditions	-.05	(1.78)	-.05	(1.62)	.05	(3.09)	.04	(.91)	.002	(.01)
Severity-Complexity	.05	(2.27)	.12	(16.69)***	.09	(11.63)***	.09	(8.50)**	.07	(9.20)**
Urgency	.18	(49.30)***	.08	(11.34)***	.09	(20.52)***	.02	(.44)	.06	(12.21)***
Encounter Characteristics:										
Office Visit	---		---		---		---		---	
Professional Referral	.02	(.27)	.02	(.34)	.01	(.14)	-.10	(5.17)*	.03	(.88)
Number of Visits	.000	(.02)	-.004	(3.58)*	-.001	(.35)	-.01	(5.24)*	.002	(1.49)
Geographic Characteristics:										
Northeast Region	-.09	(2.50)	-.07	(1.67)	-.04	(.60)	-.05	(.81)	.000	(.000)
North Central Region	.03	(.31)	.07	(2.38)	.03	(.42)	.08	(2.62)	.04	(.90)
South Region	.01	(.02)	-.04	(.53)	.09	(4.63)*	.10	(3.46)	.09	(5.86)**
SMSA Status	.08	(3.76)	.04	(1.10)	.09	(8.34)**	.12	(9.57)**	.05	(3.23)
Joint F-statistics, geographic dummies removed	2.12		3.18*		4.04**		4.26**		2.59*	
F-statistic	6.87***		4.12***		6.16***		5.74***		5.90***	
Adjusted R^2	.11		.06		.10		.09		.09	
Mean of Dep. Var.	.42		.30		.18		.57		.15	

---

*p<.05, **p<.01, ***p<.001

TABLE V-7 (cont.)

	Referral	
Independent Variables	Coeff	(F)
Constant	-.17	
Physician Specialty:		
Family Practice	.03	(.75)
Pediatrics	-.12	(6.79)**
Physician Characteristics:		
Age	-.000	(.02)
Board Certification	-.04	(2.47)
Solo Practice	-.01	(.21)
Patient Characteristics:		
Age	-.001	(4.29)*
Sex (male=0, female=1)	-.03	(2.02)
Multiple Conditions	.04	(2.59)
Severity-Complexity	.02	(.53)
Urgency	.09	(32.19)***
Encounter Characteristics:		
Office Visit	---	
Professional Referral	.16	(29.96)***
Number of Visits	.01	(19.98)***
Geographic Characteristics:		
Northeast Region	-.03	(.46)
North Central Region	-.04	(1.39)
South Region	-.04	(1.09)
SMSA Status	.02	(.64)
Joint F-statistics, geographic dummies removed	.62	
F-statistic	7.37***	
Adjusted R^2	.12	
Mean of Dep. Var.	.12	

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*p<.05, **p<.01, ***p<.001

counseling for asthma, X-rays and counseling for low back pain, and X-rays for pneumonia.

Tables V-1 through V-7 show many differences among regions and areas inside and outside SMSAs. As expected, physicians in SMSAs follow different practice patterns than those outside SMSAs in several respects. Based on significant coefficients observable in the tables, physicians in SMSAs deliver several types of services for given tracer conditions differently than those outside SMSAs. For the types of visits shown in these tables, physicians in SMSAs, for example, provide electrocardiograms for hypertension more often than those outside SMSAs; they provide X-rays and systemic drugs more frequently for heart disease; they give injections more often for tonsillitis and pharyngitis; they perform more cultures and prescribe systemic drugs more frequently for patients with pneumonia seen on follow-up visits in the hospital.

But physicians outside SMSAs provide several components of care more frequently for patients with specific conditions. Physicians outside SMSAs, for example, more often prescribe systemic drugs for patients with pharyngitis or tonsillitis than those in SMSAs. They tend to hospitalize patients more frequently for low back pain as well.

While urban-rural differences are perhaps predictable, more surprising is the finding that region often makes a significant difference in delivery of specific components of care. Among the regression results presented in this chapter and its appendix, coefficient estimates suggest that physicians in the West generally deliver fewer components of care than physicians elsewhere. In Tables V-1 through V-7 (and related tables in Appendix V) the coefficients on dummy variables representing residence in the Northeast, North Central, and South, reflect differences from the West, the excluded category. Typically, significant coefficients on the regional variables included in the equations are positive in sign. Physicians in the Northeast, North Central, and South, for example, provide more systemic drugs and electrocardiograms in follow-up visits for patients with hypertension or heart disease. They provide more counselling during the initial visit for patients with low back pain, and order cultures more frequently on follow-up visits to patients hospitalized for pneumonia.

Yet physicians in the West do provide some components of care for specific tracer conditions more often than their colleagues located elsewhere. Western physicians order cultures during initial visits for tonsillitis and pharyngitis more frequently than physicians in other regions. They also give injections more frequently to first visit patients with nasopharyngitis than do non-Westerners. While Western physicians appear to follow practice patterns different from physicians elsewhere, peculiarities of other regions discourage general statements about regional variation. Physicians in the South, for example, provide fewer cultures, more systemic drugs, and more injections than physicians elsewhere.

As indicated by cross-tabulation (Appendix Tables V-1-C through V-7-I), variations within specialty complicate the relation between geographic factors and components of care for the seven tracer conditions. At times, these variations involve additive effects, exaggerating differences between specialties. Family practitioners prescribe systemic drugs in 73.0 percent of their patient encounters for tonsillitis and pharyngitis, while pediatricians prescribe systemic drugs 65.2 percent of the time. For family practitioners in non-SMSA parts of the South, though, this percentage rises to 85.5. In North Central

SMSAs, the percentage drops to 54.4 for pediatricians. Although this comparison is not adjusted for specific patient characteristics, it still deserves the attention of researchers. Members of one specialty in a particular section of the United States provide a specific component of care almost twice as often, for essentially the same condition, as members of another specialty in a different part of the country.

Even greater differences can be found among physicians treating hypertension, a condition relatively restricted in age of incidence. Family practitioners order laboratory tests almost 30 percent less frequently than cardiologists for this disease. But family practitioners in Western SMSAs order these tests only one-fourth as often as cardiologists in Southern SMSAs. Family practitioners generally perform electrocardiograms one-third as often as internists; family practitioners in North Central, non-SMSA areas perform these procedures one-seventh as often as internists in Southern SMSAs.

The effects of specialty apparently interact with those of locale to produce further variations in the practice patterns noted above. In several cases, these interrelations confound the individual effects of specialty. Treatment of pneumonia provides one illustration. Although family practitioners generally perform X-rays for this illness three times as often as pediatricians, family practitioners in Northeastern SMSAs and North Central pediatricians outside SMSAs perform the procedure with almost equal frequency. In ischemic heart disease, a condition more restricted in age range than pneumonia, cardiologists generally perform X-rays twice as frequently as family practitioners. But family practitioners in Western SMSAs perform these procedures almost as often as Western cardiologists practicing outside SMSAs.

Encounter Time

Encounter time, the second element of practice patterns considered here, displays a somewhat more consistent pattern than the analysis of components of care. The research team investigated variation in encounter time in essentially the same manner as components of care. Table V-8, summarizing a series of multiple regression equations predicting time recorded for encounters in the seven tracer conditions, presents the core findings of this phase of the research. Like the coefficients estimated for components of care, the coefficients presented in Table V-8 are abstracted from equations including all the variables used to predict practice patterns in Chapter IV.

Table V-8 suggests that, in most cases, physicians in the West have longer average encounter times with their patients than physicians in other regions. This pattern is most evident in encounters for tonsillitis and pharyngitis, nasopharyngitis and URI, and low back pain. For the other tracers, the results are more mixed, though the exceptions (e.g., South for heart disease and Northeast for hypertension) are not significantly different from West, rather than having significantly longer times.)

The table also provides evidence, though weak, that physicians in SMSAs spend more time with their patients than those outside SMSAs. For all tracers except tonsillitis and pharyngitis, physicians in urban areas spend more time on individual patient encounters than those in rural localities. However, only the follow-up visit coefficients for heart disease, hypertension, and low back pain are statistically significant. Since the crude differences showed encounter times in SMSAs to be longer (see Tables V-1-I, V-2-I, V-3-J, V-4-I, V-5-I, V-6-G, V-7-I in Appendix V), the inclusion of the controls serves to reduce the differential.

TABLE V-8

COEFFICIENTS FROM REGRESSION EQUATIONS PREDICTING THE EFFECTS OF GEOGRAPHIC FACTORS ON ENCOUNTER TIME FOR SEVEN TRACER CONDITIONS[1]

Tracer	First Visit	Follow-up Visit
Hypertension		
Northeast	1.17	-.11
North Central	-1.14	-.26
South	-1.02	-.07
SMSA	2.37	1.14**
Mean Encounter Time (# of cases)	19.14 (838)	13.23 (2513)
Heart Disease		
Northeast	-2.14	-.53
North Central	-1.31	-1.23
South	1.06	-.02
SMSA	1.78	1.73***
Mean Encounter Time (# of cases)	24.15 (542)	16.89 (1884)
Asthma		
Northeast	-1.25	-1.20
North Central	4.11	.05
South	.94	-1.12
SMSA	.44	1.33
Mean Encounter Time (# of cases)	13.64 (259)	13.23 (298)
Tonsillitis and Pharyngitis		
Northeast	-1.02***	.56
North Central	-.17	.13
South	-.37	.12
SMSA	-.22	-.09
Mean Encounter Time (# of cases)	8.75 (2783)	8.77 (345)
Nasopharyngitis and URI		
Northeast	-.29	.01
North Central	-.80**	-.28
South	-.94***	-.46
SMSA	.35	-.86
Mean Encounter Time (# of cases)	9.40 (2630)	10.39 (368)

TABLE V-8 (continued)

Low Back Pain		
Northeast	-1.38*	-3.43***
North Central	-2.37*	-2.44**
South	-2.69**	-1.92**
SMSA	.68	1.45*
Mean Encounter Time (# of cases)	16.0 (611)	12.03 (638)
Pneumonia		
Northeast	.45	.48
North Central	-.05	-1.36
South	-1.00*	-1.31
SMSA	.27	.40
Mean Encounter Time (# of cases)	10.35 (1274)	10.30 (501)

---

*p <.05
**p <.01
***p <.001

[1] Numbers in tables (except means) are unstandardized partial regression coefficients from equations predicting the provision of specified components of care. Coefficients on dichotomous variables representing regions reflect differences from the U.S. West, the variable representing this region having been omitted from the equations. In addition to variables representing region and SMSA designation, these equations include specialty, physician age, board certification, practice mode (solo vs. other), patient age and sex, presence of comorbid conditions, severity, complexity, and urgency of case, patient source (referral vs. self), and number of visits for this problem. Significance levels refer to those associated with the geographic variables and are determined according to the F-test.

Productivity

Table V-9 presents regression coefficients abstracted from equations predicting the natural log of total weekly visits for five specialties. In other words, the geographic dummy variables were included in the production functions estimated in Chapter III, Table III-5. Of all relationships examined here between geographic factors and medical practice, those linking region and SMSA with productivity are the most consistent. The geographic variables contribute significantly to the explanation of productivity among physicians in these five specialties. Joint f-tests of the additional variance accounted for by the addition of the geographic variables are significant for equations run on all five specialties. Unlike the equations presented thus far in the present chapter, those summarized in Table V-9 are based on physicians as the unit of observation, instead of the encounter. The coefficients in Table V-9, then, reflect contributions to the variance in productivity not explained by a variety of influences, including expected encounter time.

The table generally indicates that physicians located outside the West see more patients per week than Western practitioners. Not all coefficients on the regional variables included in the equations are statistically significant. But except for pediatricians in the Northeast, a coefficient of very low magnitude, coefficients in all equations on all regional variables are positive. Furthermore, regardless of specialty, physicians in an SMSA see fewer patients per week, other things equal.

Other Environmental Factors

The USC/ARF data base enabled the research team to examine the effects of several "environmental" features on service delivery.

TABLE V-9

COEFFICIENTS ON GEOGRAPHIC VARIABLES FROM REGRESSION EQUATIONS PREDICTING WEEKLY PATIENT VISITS[1]

	Specialty				
Independent Variables	Family Practice	Internal Medicine	Cardiology	Pediatrics	Orthopedic Surgery
SMSA (=1 if in SMSA)	-.10 (4.2)*	-.15 (6.8)*	-.26 (2.5)	-.08 (22)***	-.19 (6.3)*
Northeast	.16 (3.8)	.14 (4.9)	.47 (8.5)*	-.002 (.001)	.25 (8.5)***
North Central	.14 (4.6)*	.18 (9.0)**	.33 (3.7)	.08 (1.2)	.28 (8.6)**
South	.21 (12.4)***	.06 (1.0)	.18 (1.2)	.11 (3.2)	.26 (11.4)***
West (excluded)	---	---	---	---	---
Adj. R^2 of Other Variables[2]	.39	.31	.20	.25	.36
Total Adj. R^2	.42	.35	.32	.26	.45
F-statistic	12.1***	10.7***	3.0***	6.3**	6.6**
Mean of Total Weekly Visits	167	134	113	151	146
Number of Observations	244	286	69	245	110

*$p < .05$
**$p < .01$
***$p < .001$

[1] Dependent Variable: ln actual visits during study week.

[2] Other variables in these production function regressions include ln actual hours, actual hours^2, FTE aides, FTE aides^2, experience (in years), experience^2, size of group, size of group^2, board certification, percentage of visits in hospital, case mix specialization, and expected encounter time.

County-level variables available in the ARF include the ratio of physicians to population and the infant mortality rate. These variables represent features of localities which may explain observed geographic differences in service delivery. Physician-population ratio, for example, may be the key to differences between rural and urban places. Infant mortality rates may reflect a vast category of social, economic, and health conditions associated with life in local areas.

Tables V-10 and V-11 present multiple regression coefficients from equations predicting practice patterns for four tracer conditions. Though not shown, these equations contain all the right-hand variables presented in Tables V-1 through V-7. In addition, the equations represented in Tables V-10 and V-11 include the number of patients each physician treated during the three days for which the log diary was kept. This variable was included to capture the impact of market demand as it affects the volume of practice of the individual physician.

Tables V-10 and V-11 demonstrate that the number of patients seen, the county physician-population ratio, and the county infant mortality rate are often significantly associated with particular patterns of care. In general, physicians who see larger numbers of patients give fewer tests and prescribe more systemic drugs. Physicians in counties with higher physician-to-population ratios tend to give more tests, particularly cultures. Physicians in counties with high infant mortality rates tend to give fewer cultures and systemic drugs than physicians elsewhere. While full tables do not appear in this report, it should be noted that inclusion of these environmental variables in regression equations predicting components of care does not result in the loss of significance of the coefficients on variables representing region and SMSA residence.

TABLE V-10

COEFFICIENTS FROM REGRESSION EQUATIONS INDICATING THE EFFECTS OF ENVIRONMENTAL FACTORS ON COMPONENTS OF CARE FOR FOUR TRACER CONDITIONS[1] FIRST VISIT IN OFFICE

	Components of Care			
	X-ray	Electrocardiogram	Culture	Systemic Drugs
Hypertension (N=838)				
Number of Patients	-.00060*	-.00065*		.00124**
Physician/Population	.00028*	.00060***		.00058***
Infant Mortality Rate	-.00000	.00034		-.00166**
Mean of Dep. Var.	.16	.20		.55
Tonsillitis and Pharyngitis (N=2783)				
Number of Patients	-.00001		-.00083***	.00010
Physician/Population	-.00002		.00095***	-.00049***
Infant Mortality Rate	-.00004		-.00128***	.00041
Mean of Dep. Var.	.01		.55	.70
Nasopharyngitis & URI (N=2630)				
Number of Patients	-.00008		-.00040**	.00107***
Physician/Population	-.00002		-.00064***	-.00023
Infant Mortality Rate	-.00001		-.00065***	-.00006
Mean of Dep. Var.	.03		.14	.74
Pneumonia (N=1274)				
Number of Patients	-.00082***		-.00126***	.00028
Physician/Population	-.00004		.00041**	-.00042*
Infant Mortality Rate	.00006		-.00054*	-.00005
Mean of Dep. Var.	.14		.13	.67

*p < .05
**p < .01
***p < .001

[1] Numbers in tables (except means) are unstandardized partial regression coefficients from equations predicting the provision of specified components of care. County physician/population ratios (75) are measured per 100,000 population. Infant mortality rates are based on county five year averages (71-75) and are measured per 1,000,000 population. In addition to variables representing number of patients, physician/population ratio, and infant mortality rate, these equations include region, SMSA status, specialty, physician age, board certification, practice mode (solo vs. group), patient age and sex, presence of comorbid conditions, severity, complexity, and urgency of case, and patient source (referral vs. self). Significance levels refer to those associated with the environmental variables, and are determined according to the F-test. Means represent mean probabilities of specified components of care being given for patient encounters for each tracer condition.

TABLE V-11

COEFFICIENTS FROM REGRESSION EQUATIONS INDICATING THE EFFECTS OF ENVIRONMENTAL FACTORS ON COMPONENTS OF CARE FOR FOUR TRACER CONDITIONS[1] FOLLOWUP VISITS IN OFFICE

	Components of Care			
	X-ray	Electro-cardiogram	Culture	Systemic Drugs
Hypertension (N=2513)				
Number of Patients	-.00029*	-.00051***		.00080***
Physician/Population	.00009	.00014*		.00018*
Infant Mortality Rate	.00012	.00027		.00004
Mean of Dep. Var.	.08	.11		.71
Tonsillitis and Pharyngitis (N=345)				
Number of Patients	-.00008		-.00031	.00142**
Physician/Population	-.00005		-.00004	.00065
Infant Mortality Rate	-.00005		-.00157*	-.00075
Mean of Dep. Var.	.01		.34	.66
Nasopharyngitis & URI (N=368)				
Number of Patients	-.00036		-.00032	.00234***
Physician/Population	.00015		.00005	.00030
Infant Mortality Rate	-.00018		-.00015	-.00153*
Mean of Dep. Var.	.05		.06	.62
Pneumonia (N=501)				
Number of Patients	.00104*		.00034	.00061
Physician/Population	-.00017		.00026	.00042
Infant Mortality Rate	-.00091		-.00010	-.00034
Mean of Dep. Var.	.35		.05	.58

*p < .05
**p < .01
***p < .001

[1] Numbers in tables (except means) are unstandardized partial regression coefficients from equations predicting the provision of specified components of care. County physician/population ratios (75) are measured per 100,000 population. Infant mortality rates are based on county five year averages (71-75) and are measured per 1,000,000 population. In addition to variables representing number of patients, physician/population ratio, and infant mortality rate, these equations include region, SMSA status, specialty, physician age, board certification, practice mode (solo vs. group), patient age and sex, presence of comorbid conditions, severity, complexity, and urgency of case, patient source (referral vs. self), and number of visits for this problem. Significance levels refer to those associated with the environmental variables and are determined according to the F-test. Means represent mean probabilities of specified components of care being given in all patient encounters for each tracer condition.

Health Manpower Shortage Area Designation

Finally, the research team performed a limited analysis of practice pattern differences between counties designated by the Health Services Administration as Health Manpower Shortage Areas and counties not so designated. Inspection of cross-tabulations with HMSA designation as the control revealed that wholly designated and non-designated counties differ in their patterns of physician care (see Tables 1-A through 7-G in Appendix IV). The results for specialties with more than fifty observations in a shortage designated county on a tracer condition generally mirrored the urban/rural differences described above, though of slightly greater magnitude. Coefficients from regression equations predicting use of components of care for two tracer conditions--pneumonia and nasopharyngitis and URI, appear in Table V-12. This table has been computed for rural (non-SMSA) counties only, an attempt to reduce the number of confounding variables in the equations. The coefficients in Table V-12 are from regressions containing the standard right-hand variables included in Tables V-1 through V-7 plus dummy variables representing designation status. The table presents separate sets of coefficients for first and follow-up office visits.

Few of the coefficients in Table V-12 are statistically significant. The only significant coefficients appear in the equation predicting components of care during first visits for nasopharyngitis and URI, indicating that physicians in designated counties provide fewer laboratory tests and systemic drugs than physicians elsewhere. While similar computations for other diseases may reveal stronger and more significant differences between services in designated and nondesignated areas, Table V-12 provides less information on the reasons for variation in service delivery than the preceding analyses of variation according to

TABLE V-12

COEFFICIENTS OF VARIABLES REPRESENTING HEALTH MANPOWER SHORTAGE AREA DESIGNATION FROM EQUATIONS PREDICTING COMPONENTS OF CARE FOR URI AND PNEUMONIA, OFFICE VISITS IN RURAL (NON-SMSA) AREAS[1]

	Components of Care (Dependent Variables)				
Tracer Condition	X-ray	Lab	Culture	Systemic Drugs	Duration of Visit (minutes)
Nasopharyngitis and URI					
First Visit (N=707)	.013	-.853*	-.021	.137**	.337
Mean	.02	.11	.08	.79	8.68
Follow-up Visits (N=75)	-.032	.111	-.041	.347	-5.906
Mean	.03	.13	.04	.53	10.56
Pneumonia					
First Visit (N=227)	.090	-.052	.008	.116	1.101
Mean	.18	.13	.11	.74	10.48
Follow-up (N=109)	.346	-.001	.002	.347	1.79
Mean	.40	.21	.04	.55	9.51

---

*p <.05
**p <.01
***p <.001

[1] Numbers in tables (except means) are unstandardized partial regression coefficients from equations predicting the provision of specified components of care. Whole county designation as a Health Manpower Shortage Area is based on December 1978 designations. In addition to the variable representing whole county shortage designation, these equations included partial county HMSA designation, specialty, physician age and sex, presence of comorbid conditions, severity, complexity, and urgency of case, patient source (referral vs. self), and number of visits for this problem. Significance levels refer to those associated with the designation variables, and are determined according to the F-test. Means represent mean probabilities of specified components of care being given in patient encounters for each tracer condition. See Tables V-12-A through V-12-D, Appendix V, for complete results.

region and SMSA location. Furthermore, entering of designation status into equations predicting components of care generally does not reduce the coefficients on other geographic variables below the level of statistical significance. These results suggest that what HMSAs measure is for the most part captured by the control variables used.

The multiple perspective presented in this chapter yields several striking findings with regard to geographic factors. While specialty plays a role in components of care and encounter time, region and SMSA residence, and environmental variables also significantly affect practice patterns. While physicians who practice outside SMSAs or in the West generally provide fewer components of care than practitioners in SMSAs or outside the West, relationships among these variables are complex and interactive. Physicians in the West clearly show a tendency to spend longer periods of time in encounters for selected tracer conditions than physicians elsewhere. Over and above the effects of differing average encounter times, physicians in the West and in SMSAs see fewer patients per week than physicians elsewhere.

CHAPTER VI

CONCLUSION

The interspecialty analysis reported here contains several features of potentially great value to health manpower planners. The detailed evaluation of the USC data base, with which the present study begins, provides researchers with an understanding of the range of questions which this unusual resource may help them answer. The assembly of a new data base through the merging of USC and ARF data, furthermore, offers researchers an extremely comprehensive source of information for future studies. Perhaps most important, the work reported here includes a reexamination and extension of important theories and findings in health manpower on the basis of data newer and more comprehensive than those available to earlier investigators.

Beyond examination of the quality and applicability of the USC data, the Battelle/University of Washington/USC research team focused on three areas of primary concern to health manpower planners: determinants of productivity and labor supply, interspecialty differences in practice patterns, and impacts of geographic factors on services delivered by physicians. Each of these considerations bears directly upon the overall goal of national health manpower planning, the availability of high quality medical services to all who need them, at acceptable cost. Effective planning requires an understanding of the independent effects of economics, specialty membership, and geographic factors on service delivery as well as of the impact of any two or more of those factors working together. Planners and policymakers must, for example, understand the differential tendency of various specialties to utilize specific diagnostic and therapeutic techniques for particular diseases. But to formulate effective policies of resource allocation--capitation funds to increase the size of a particular specialty, for example--they must understand that geographic factors may magnify, reduce, or erase interspecialty differences.

Drawing on empirical findings presented in the preceding chapters, the research team has formulated a series of policy implications for health manpower planning. While these implications are based on surveys which must be viewed with a degree of caution and examined in the light of findings from other studies, they follow from intensive analysis of perhaps the most comprehensive data base on physician's activities available today. The research team stated these implications both as direct responses to empirical findings and in critical review of conclusions reported by earlier investigators.

To encourage readers to formulate their own conclusions, the preceding chapters have omitted discussion of the relevance of empirical findings to the work of earlier researchers and issues of public policy. Such discussion, though, must serve as the basis for concrete recommendations. The general conclusions of this study, then, begin with a review of empirical findings in Chapters III, IV, and V, their implications for the concerns that led to this investigation, and their relevance to conclusions presented by earlier researchers.

Discussion of Findings

Productivity and Labor Supply

Chapter III presents a series of multiple regression models to explain productivity and labor supply among physicians. As noted in this chapter, the definitions of productivity and labor supply follow conventions of health economics which diverge from conventional usage of these terms. In this content, labor supply denotes not numbers of individual physicians, but the number of hours that individual physicians supply to the labor market. Productivity is defined operationally, addressing neither content nor outcome of care, but numbers of patients seen during a specified period of time.

The analysis in Chapter III generally finds the same factors correlated with productivity and labor supply in each specialty. According to regression equations estimated separately for family practice, internal medicine, cardiology, pediatrics, and orthopedic surgery, hours worked and encounter time consistently help determine the numbers of patients seen per week (see Table III-5). Hours worked and mean encounter time, in fact, go far towards explaining away all interspecialty differences in equations estimated on the basis of the pooled samples of all five specialties (see Table III-4). Apparently, differences in case-mix among physicians affect productivity through their influence on mean encounter time.

In general, the estimates suggest that while previous productivity studies were unable to control for case mix, this in itself may not have seriously biased their estimates. The labor supply results in Chapter III suggest that higher prices per visit may actually depress physician productivity via their impact on hours worked. Coefficients on price in equations predicting weekly hours worked (see Table III-8) tend to be negative, and the production function estimates show that hours worked is an important determinant of productivity.

The findings in Chapter III on case-mix and encounter time have few analogues in the literature of health economics, most earlier studies lacking data of this kind. Researchers in the present investigation enjoyed an unusual opportunity to test the proposition that physicians who specialized in the cases seen most by their specialty would, through associated efficiencies, produce greater output than those whose mix of cases was broader. Table III-5 presents little evidence that this is true. As indicated above, case mix affects productivity only when it reflects one physician's tendency to treat conditions which other members of their specialty find time consuming. In a specialty whose typical work includes many time-consuming procedures, patient visits must be relatively few.

The present study's findings on labor supply and on the marginal product (see Table III-7) of resources, though, address important concerns of earlier researchers. Feldstein (1970) and Sloan (1974) present tentative evidence that when prices per visit pass a certain point, physicians tend to see fewer patients--that is, their labor supply curve is backward bending. While evidence for the backward-bending curve emerging from the present study is not strong, it confirms tentative evidence from earlier investigations.

The input of resources such as aides also speaks to empirical findings reported in earlier inquiries. The findings presented here, though, differ from those reported earlier. While Reinhardt reported in 1972 that an additional aide would allow the average physician to see thirty or so additional patients per week, the findings of the present study suggest that an additional aide would enable physicians to see at most twelve more patients. While differences in the methods used to collect the USC data and the data used by Reinhardt may explain part of this divergence, it is also possible that additional aides may be less useful at this time than they were when the data with which Reinhardt worked were collected. Those data, collected in 1965, indicated that the average physician in the United States employed fewer than two aides; the average physician in the present study employed between two and three.

Practice Patterns

While Chapter III concentrates on factors which account for the number of patients physicians see, Chapter IV focuses on the content of physician-patient encounters. The analysis of practice patterns in Chapter IV attempts to explain two features of the physician-patient encounter. These include components of care, or diagnostic and therapeutic procedures employed, and time spent per encounter. By generating insights into the reasons for variance in encounter time, this chapter provides background for the foregoing economic analysis. By indicating the nature of the product delivered by members of different specialties, this chapter helps give concrete meaning to the interspecialty analysis of productivity.

Like the productivity analysis, the investigation of practice patterns reported here benefits from an unusually comprehensive data base. Earlier studies have focused on single determinants of practice patterns such as organization of practice (Mechanic, 1975; Reidel and Reidel, 1979), board certification (Payne, 1976), and environment (Freidson, 1970), as well as specialty membership (Noren et al., 1980). But few earlier studies have performed multivariate analysis on these determinants of patterns of care or examined sufficient numbers of variables in their investigations to determine the relative importance of all major factors. Including numerous items on training, practice organization, and personal characteristics of physicians, as well as detailed data on patients encountered, the surveys used in the present study allow more complete testing of hypotheses about determinants of patterns of care.

The principal hypothesis of this part of the research (stated as a null hypothesis in Chapter IV) was that physicians in different specialties provide different components of care to patients with highly similar conditions. Chapter IV provides considerable evidence to support this hypothesis. Tables IV-1 through IV-7 indicate that physicians in family practice, internal medicine, cardiology, pediatrics, and orthopedic surgery tend to perform, order, or prescribe different components of care for patients in each of seven tracer conditions. For two circulatory conditions, internists are significantly more likely to perform tests (particularly the electrocardiogram) than family practitioners. Cardiologists are more likely to perform tests, but less likely to prescribe drugs than either family practitioners or internists. For a series of respiratory conditions, internists tend to perform tests and prescribe systemic drugs more frequently than family practitioners and pediatricians. For most conditions, pediatricians tend to avoid drug use and order cultures more frequently than other specialists. These patterns of care are highly robust, differences among specialties remaining significant even after a large number of physician, patient, and encounter characteristics have been held constant (see Tables IV-8 through IV-14).

Multivariate analysis also reveals significant differences in the average encounter time which members of each specialty report in visits for the seven tracer conditions. For circulatory illnesses, internists spend more time per encounter than family practitioners, and cardiologists more time than internists. For three of the four respiratory conditions, internists spend significantly more time per encounter than family practitioners or pediatricians. Again, these differences remain significant even after a large number of background variables--including patient age--have been effectively held constant (see Table IV-15). As Table IV-16 indicates, use of specific components of care helps determine encounter time. Use of testing procedures tends to increase encounter time, while ordering of systemic drugs or injections correlates with shorter visits.

The patterns of care observed in this study confirm results reported by Noren et al. in 1980. Like the present study, Noren's investigation found that family and general practitioners report shorter encounter times and deliver fewer components of care than internists for standard tracer conditions. The present study, however, provides stronger and more extensive conclusions. Interspecialty differences remain after a comprehensive list of control variables--physician characteristics such as age, board certification, and practice organizations (solo versus group), patient characteristics such as age, sex, and case severity, complexity, and urgency, and encounter characteristics such as site of visit and number of previous visits for the tracer condition--have explained all the variance they can.

Patterns of care observed in the present investigation suggest differences among specialties not covered by the earlier research. Cardiologists and pediatricians appear to provide care according to patterns peculiar to their specialties. Typically playing the role of referral physicians, cardiologists perform more tests than other practitioners who treat essential benign hypertension and ischemic heart disease. Cardiologists, though, also prescribe drugs less often than family practitioners or internists. Presumably, standard drug therapies for these conditions are prescribed by primary care physicians, while testing for complex problems is often left to the cardiologist. Pediatricians, treating exclusively children, seem to prefer testing, watching, and waiting over immediate medication.

A specialty's place in the medical division of labor offers convincing explanations for the patterns of care observed in this study. The role of family practitioners, who see relatively large numbers of patients as primary care providers, seems compatible with avoidance of testing and relatively heavy reliance on drugs. This pattern of care may constitute a method of reducing encounter time in response to heavy patient demand, or a choice of procedures which permits the physician to build a practice of large size. Internists and cardiologists provide more testing and require longer encounter times, observations consistent with their roles as consultants. Pediatricians adopt a conservative approach to their patients, an attitude compatible with the relatively low tolerance of children for drugs and intrusive testing procedures.

Yet differences in the concrete tasks which members of various specialties face do not entirely account for the differences they exhibit in patterns of care. Multiple regression statistics as well as contingency tables presented in Appendix IV offer strong evidence that interspecialty differences remain even after patient and encounter characteristics have been completely standardized. In visits by patients with tonsillitis and pharyngitis fifteen years of age and under, family practitioners still prescribed systemic drugs significantly more often and ordered cultures significantly less frequently than pediatricians. Among visits for ischemic heart disease by self-referred patients, cardiologists still performed electrocardiograms significantly more often than family practitioners and internists. Although components of care rendered for all tracer conditions help explain variance in encounter time, specialty membership contributes significantly to the variance even after components of care (as well as many other variables) have explained all they can. Different specialties provide care according to different patterns for reasons not adequately measured in this study or not directly related to quantifiable patient characteristics.

Geographic Variables

Focusing on the relations of geographic factors to the delivery of physician's services, Chapter V addresses a longstanding concern among health manpower planners. According to findings presented in Chapter V, geographic conditions play an important part in the amount and content of services available to consumers. While this chapter confirms some expectations about the effects of physician distribution, it raises questions about approaches policymakers have taken to evaluating and rectifying distribution problems.

Chapter V first demonstrates that physicians in different geographic regions tend to deliver care for selected tracer conditions according to different patterns. While patterns of care are often complex, particularly when the interactions among specialty, region, and location within or outside an SMSA are taken into consideration, physicians in the West generally provide fewer components of care than those in the Northeast, North Central, or Southern regions. These relations remain significant even after a large number of control variables, including specialty membership, have explained all the variance they can.

Region apparently exerts an influence on other features of service delivery as well. Table V-8 indicates that, where statistically significant differences exist, Western physicians spend more time with their patients than physicians elsewhere. Table V-9 presents a consistent set of coefficients indicating that physicians outside the West see more patients per week than Westerners.

Impacts on service delivery were observed in connection with several other geographically-related variables widely thought of as crucial determinants of quality and availability of care. Physicians located in SMSAs tended to provide more components of care than those outside SMSAs, but physicians outside SMSAs provided more frequent referral for asthma, more systemic drugs for tonsillitis and pharyngitis, and more hospitalization for low back pain. Although Table V-8 presents only a few significant coefficients on encounter time, physicians in SMSAs seem to spend more time with their patients than those outside SMSAs when all the standard control variables have explained all they can. Coefficients presented in Table V-9 indicate that physicians in SMSAs see significantly fewer patients than their rural colleagues.

As expected, factors reflecting the physician's work load affect service delivery. Physicians who practice in counties with low physician-population ratios generally provide fewer components of care than physicians elsewhere. Physicians who see relatively large numbers of patients also tend to provide fewer components of care in patient encounters (see Tables V-9 and V-10). These relations, again, remain significant after a large number of control variables have explained all they can.

Finally, practice in a county designated by the Bureau of Health Professions as Health Manpower Shortage Areas seems to have few effects on service delivery independent of the control variables. Table V-12 presents only two significant coefficients on the variable representing designation. For nasopharyngitis and URI, physicians in designated counties provide fewer laboratory tests and more systemic drugs than physicians elsewhere.

In general, these data suggest that physicians in scarcity areas--indicated by several criteria of varying discriminatory power--modify their practices in accordance with their surroundings. Lacking colleagues to help take care of patient demand, physicians outside SMSAs see more patients per week than their urban colleagues. Though inconclusive, evidence in the present study raises the possibility that many physicians provide fewer components of care and spend shorter periods of time in individual patient encounters in order to carry greater caseloads.

A more detailed look at practice patterns in Chapter V provides additional evidence for accommodation by physicians to conditions of scarcity. While physicians outside SMSAs generally provide fewer tests, they give more systemic drugs and injections, and refer and hospitalize patients more frequently for some conditions. Physicians in the South, a region with a relatively low physician-population ratio, also generally provide more systemic drugs and injections while giving fewer cultures. This pattern of care outside SMSAs and in the South is compatible with a need to process patients immediately and quickly, precluding waiting for and studying test results. Systemic drug prescriptions and injections require relatively little time. Hospitalization may also be viewed as a physician time-saver, allowing the doctor to "watch" the patient without scheduling return visits to his or her office, and reducing the risk that the patient will not return. Referral as well may be viewed as an outcome of scarcity, physicians in scarcity areas not having to fear that consultants with light caseloads may try to retain their patients. The tables in Chapter V indicate a tendency for physicians in Health Manpower Shortage Areas or in counties with low physician-population ratios to follow similar practice patterns.

More complicated, though, is the effect of region on patterns of care. As Chapter V discusses in detail, practice patterns, productivity, and labor supply all seem to vary according to region. The data support several possible explanations of regional variation. Since physicians tend to locate in the region where they receive their training, regional variation may arise from the dominance of major institutions of medical education in regional centers. Alternatively, differences in lifestyle and public expectations about health care as well as factors related to the scarcity of medical care personnel may explain regional variation.

Determining the causes of regional differences is beyond the scope of this project. But of perhaps greater importance to health manpower planning is the strength of regional variables in explaining service delivery. In the present study, region explains a greater proportion of the variance in practice patterns and productivity than either SMSA residence or physician-population ratio. While only a limited body of research has called attention to the importance of regional variation (Hartman and Watts, 1978), public policy has focussed largely on rural-urban differences and officially designated shortage areas. Given the relatively weak explanatory power of location in SMSAs and county physician-population ratio and the apparent ability of physicians to compensate for scarcity, policymakers may wish to redirect their attention to alternative dimensions of geographic variation.

Special Issues in Service Delivery

While meriting the attention of planners and policymakers, results of several lines of inquiry have been restricted to Appendices I and II. Appendix I presents statistical findings on the similarities and differences in data on patient encounters collected in the USC and the National Center for Health Statistics' National Ambulatory Medical Care Survey (NAMCS) studies. Appendix II focuses on differences in medical activities related to physician gender, and differences in practice patterns between emergency physicians and physicians in other specialties. These areas of inquiry receive attention only in appendices due to their limited scopes and special focus. The research team felt that the setting and task of emergency medicine differed sufficiently from other medical activity to weaken the validity of direct comparisons, had they been included in the analyses in Chapter III-V. Researchers, finally, were forced to limit their inquiry into the impact of physician gender due to the scarcity of office-based, female practitioners in the USC files. Appendices I and II, then, report data which, while potentially useful to planners, must be viewed with special caution.

Policy Implications

Until now, the writers of this report have refrained from drawing policy implications from the empirical findings presented above. Instead, the research team has made highly detailed findings available to the reader in hopes of encouraging independent, policy-relevant thinking on the basis of new information. In closing, though, the research team thought it important to formulate a series of statements with direct policy relevance, based on discussion of the data by members in the fields of medicine, economics, statistics, geography, and sociology. Readers are advised to consider these statements or implications alongside inferences they may have already drawn on the basis of their own interpretations of the data. Instead of representing direct inferences from individual segments of this study, the policy implications which follow rely on syntheses of several sets of empirical results.

Increasing the Use of Aides Will Not Allow Physicians to See Significantly More Patients

Contrary to research reported in earlier studies, increased employment of aides seems unlikely to raise greatly productivity among physicians in the specialties examined here. Previous studies have argued that aides are underutilized; the support for this view in the findings here is weak. Differences between the data collection methods employed in earlier research and those employed here may account for some of the variance in findings, but it appears more likely that, given the number of aides physicians now generally employ, the marginal return in terms of patient visits to employment of additional aides is small.

Raising Physicians' Fees May Be Ineffective In Increasing the Supply of Services

The findings here suggest that the number of hours worked by physicians may be inversely related to remuneration currently observed fee levels. Hours worked, or labor supply, a key determinant of productivity, seems to decrease as price per visit increases.

Furthermore, hours worked do not translate directly into patient visits, but are mediated strongly by encounter time. Higher payments per visit in underserved areas, as a recent Institute of Medicine report (1978) has recommended, would be particularly inappropriate for increasing service delivery by physicians already located there. Physicians in these areas already appear able to compensate for scarcity by working more hours and seeing more patients. It would seem that any increase in supply due to higher fees would come from more physicians locating in presently underserved areas, and be offset by a decline in the services provided by existing practitioners.

Provision of Office-Based Care is More Economical Among Family Practitioners Than Other Specialists

For the seven tracer conditions examined in this report, family practitioners generally provide fewer components of care and require less time per encounter than physicians in other specialties. This is true even after case characteristics have been controlled in a variety of ways. Unless researchers can determine from other data that the additional components of care are indeed necessary among patients seen by internists, cardiologists, pediatricians, and orthopedic surgeons, office care by these specialists for the seven tracers examined here must be viewed as unnecessarily expensive. If treated by family practitioners instead of internists, these illnesses could be treated with fewer physicians using fewer medical inputs. Recommendations by others that much primary care can be provided by specialists (Aiken et al., 1979) should be viewed in this light.

Criteria for Spatial Allocation of Health Manpower Should be Reexamined

Although the Bureau of Health Professions' designation of counties as Health Manpower Shortage Areas currently serves as a basis for allocation of National Health Service Corps physicians, the findings in this report raise questions about the utility of the designation process. In general, regional differences in practice patterns were as great or greater than differences between designated and non-designated counties. Furthermore, urban-rural distinctions, the focus of much discussion in health manpower policy, may be less important for the availability of services of appropriate kinds than regional distinctions. In addition, substantial regional and urban-rural differences in physician productivity also influence the availability of care. To assist planners, health service researchers should be encouraged to develop new designations of scarcity which take regional variation in service delivery into consideration.

In conclusion, it has become clear in recent years that mere increases in the supply of physicians will not improve the ability of the American public to obtain quality care at an acceptable cost. Perhaps the most important issue in health manpower today is the determination of methods for obtaining adequate services from a stable supply of physicians. Because medical care in the United States is produced and organized along specialty lines, solutions to this problem must rely upon factors affecting productivity within various specialties, qualitative differences in products offered by each specialty, and impacts of geographic factors on care provided by each specialty. Beneficial allocation of scarce resources to training in particular specialties, to the placement of physicians where they are most needed, and to the matching of physicians with specific skills with patients who truly need them requires detailed knowledge of service delivery among the specialties. This report hopes to have contributed to the development of such knowledge.

Chapter References

Aiken, L. H. 1979. The Contribution of Specialists to the Delivery of Primary Care. N. Engl. J. Med. 300(June 14):213-227.

Feldstein, M. S. 1970. "The Rising Price of Physicians' Services." Review of Economics and Statistics 52(May):121-133.

Freidson, E. 1970. Profession of Medicine. New York: Dodd, Mead & Co., Inc.

Hartman, R. and C. Watts. 1978. "The Determination of Average Hospital Length of Stay: An Economic Approach." Quarterly Review of Economics and Business 18:83-96.

Institute of Medicine. 1978. A Manpower Policy for Primary Care. Washington, D.C.: National Academy of Sciences.

Mechanic, D. 1975. The Organization of Medical Practice and Practice Orientations Among Physicians in Prepaid and Nonprepaid Primary Care Settings. Medical Care 13:189-204.

Noren, J., Frazier, T., Altman, I., DeLozier, J. 1980. "Ambulatory Medical Care: A Comparison of Internists and Family-General Practitioners." N. E. J. Med. 302:11-16.

Payne, B. C. 1976. The Quality of Medical Care: Evaluation and Development. Chicago: Hospital Research and Educational Trust.

Reidel, R. L. and D. C. Reidel. 1979. Practice and Performance: An Assessment of Ambulatory Care. Ann Arbor: Health Administration Press, University of Michigan.

Reinhardt, U. 1972. "A Production Function for Physician Services." Review of Economics and Statistics, Vol. 54, 1(February):55-66.

Sloan, F. A. 1974. "Effects of Incentives on Physician Performance." In J. Rafferty (ed.) Health Manpower and Productivity. Lexington, MA: DC Heath.

APPENDIX I

TABLES ON SELECTED MEDICAL ACTIVITIES: COMPARISON OF USC AND NAMCS DATA

A COMPARISON OF USC AND NAMCS DATA

Tables I-A through I-D represent findings of special interest to users of data from the GMENAC Delphi Panels. These tables reexamine information given to Delphi Panel members to aid them in estimating the determinants of the number of physicians required to meet the public's needs in 1990. To make the estimates, Panel members used baseline information on the proportion of individuals in the population with a given disease who are likely to be seen by a given specialty. Figures from the National Center for Health Statistics' National Ambulatory Medical Care Survey (NAMCS) were used as baseline information by the panels. This appendix compares relevent estimates from both NAMCS and USC to help determine the confidence researchers should place in the information provided to Delphi Panel members. A set of similar findings from both NAMCS and the USC surveys would argue for the validity of both; great divergence would cast doubt on the usability of one or both.

Tables I-A through I-C provide comparisons of the "share" of the diseases treated by all 24 specialties surveyed by USC. Perhaps the best comparisons can be made of USC and NAMCS estimates for general practitioners and general internists. For internists, the percentages appear significantly different. For general practitioners, they approximate each other more closely. Similar comparisons could be made through these tables.

Tables I-D and I-E compare USC and NAMCS data on services provided for specific tracers. Again, inspection of the tables reveals some differences and some similarities. Laboratory tests and systemic drugs tend to differ, but electrocardiogram use, patient sex, and record of previous patient visits are close to identical.

TABLE I-A

ENCOUNTERS OF TWENTY-FOUR PHYSICIAN SPECIALTIES FOR ESSENTIAL BENIGN HYPERTENSION (IDCA-401), COMPARISON OF USC AND NAMCS DATA[1]--NON-HOSPITAL VISITS

	General Practice	Family Practice	Pediatrics	General Internal Medicine	Cardiology	Gastroenterology	Pulmonary Disease	Hematology	Endocrinology	Nephrology	*Neoplastic Diseases	Rheumatology	Infectious Diseases	Allergy	Dermatology	Neurology	Psychiatry	Obstetrics/Gynecology	Emergency Medicine	General Surgery	Ophthalmology	Orthopedic Surgery	Otorhinolaryngology	Neurological Surgery	Total: 24 Specialties
USC																									
Number of Encougters	970	1520	26	2236	591	290	157	156	298	665	68	207	57	86	4	5	9	69	51	90	66	2	5	2	7630
Estimated Annual Number of Visits (in thousands)	12106	2694	96	9196	1429	212	106	43	74	161	11	44	14	60	2	6	31	192	73	1084	201	7	12	1	27855
Percent of Total Visits	43.5	9.7	.3	33.0	5.1	.8	.4	.2	.3	.6	.0	.2	.1	.2	.0	.0	.1	.7	.3	3.9	.7	.0	.0	.0	100.1
NAMCS																									
Number of Encounters (2 years)	2189	24	13	1544	178	54	13	0	5	0	0	5	0	3	0	2	5	95	3	279	22	7	1	0	4442
Estimated Annual Number of Visits (in thousands)	13425	155	57	6390	730	148	23	0	26	0	0	39	0	23	0	4	21	360	5	1095	101	107	3	0	22712
Percent of Total Visits	59.1	.7	.3	28.1	3.2	.7	.1	---	.1	---	---	.2	---	.1	---	.0	.1	1.6	.0	4.8	.4	.5	.0	---	100.0

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[1] NAMCS data based on 1975 and 1976 surveys. USC data are based on 24 separate surveys conducted between February 1976 and July 1978.

*USC definition is slightly different and they call them Medical Oncologists. USC only included Neoplastic Specialists with medical secondary specialty.

Note: For all specialties NAMCS estimated 23,064,000 annual cases based on a two-year sample of 4,527. These 24 specialties represent 98.5% of all NAMCS essential benign hypertension cases.

TABLE I-B

ENCOUNTERS OF TWENTY-FOUR PHYSICIAN SPECIALTIES FOR ISCHEMIC HEART DISEASE (ICDA=412, 413), COMPARISON OF USC AND NAMCS DATA[1]--NON-HOSPITAL VISITS

	General Practice	Family Practice	Pediatrics	General Internal Medicine	Cardiology	Gastroenterology	Pulmonary Disease	Hematology	Endocrinology	Nephrology	*Neoplastic Diseases	Rheumatology	Infectious Diseases	Allergy	Dermatology	Neurology	Psychiatry	Obstetrics/Gynecology	Emergency Medicine	General Surgery	Ophthalmology	Orthopedic Surgery	Otorhinolaryngology	Neurological Surgery	Total: 24 Specialties
USC																									
Number of Encounters	433	536	1	1351	1455	116	175	94	101	112	43	103	42	37	0	2	4	10	50	25	0	1	0	3	4694
Estimated Annual Number of Visits (in thousands)	4949	1030	0	6637	3275	87	137	23	26	26	7	22	18	25	0	3	15	27	77	261	0	4	0	3	16652
Percent of Total Visits	29.7	6.2	.0	39.9	19.7	.5	.8	.1	.2	.2	.0	.1	.1	.2	---	.0	.1	.2	.5	1.6	---	.0	---	.0	100.1
NAMCS																									
Number of Encounters (2 years)	959	32	3	1276	349	14	8	0	0	0	0	1	0	1	1	0	1	6	0	68	0	1	0	1	2721
Estimated Annual Number of Visits (in thousands)	6564	238	6	5531	1463	49	64	0	0	0	0	8	0	7	4	0	4	18	0	238	0	21	0	1	14216
Percent of Total Vists	46.2	1.7	.0	38.9	10.3	.3	.5	---	---	---	---	.1	---	.0	.0	---	.0	.1	---	1.7	---	.1	---	.0	99.9

[1] NAMCS data based on 1975 and 1976 surveys. USC data are based on 24 separate surveys conducted between February 1976 and July 1978.

*USC definition is slightly different and they call them Medical Oncologists. USC only included Neoplastic Specialists with medical secondary specialty.

Note: For all specialties NAMCS estimated 14,497,000 annual cases based on a two-year sample of 2,786. These 24 specialties represent 98.1% of all NAMCS ischemic heart disease cases.

TABLE I-C

ENCOUNTERS OF TWENTY-FOUR PHYSICIAN SPECIALTIES FOR TONSILLITIS AND PHARYNGITIS (ICDA-462, 463), COMPARISON OF USC AND NAMCS DATA[1]--NON-HOSPITAL VISITS

	General Practice	Family Practice	Pediatrics	General Internal Medicine	Cardiology	Gastroenterology	Pulmonary Disease	Hematology	Endocrinology	Nephrology	*Neoplastic Diseases	Rheumatology	Infectious Diseases	Allergy	Dermatology	Neurology	Psychiatry	Obstetrics/Gynecology	Emergency Medicine	General Surgery	Ophthalmology	Orthopedic Surgery	Otorhinolaryngology	Neurological Surgery	Total: 24 Specialties
USC																									
Number of Encounters	692	1048	2371	280	17	15	14	19	31	12	11	34	59	54	0	0	1	17	313	38	0	0	530	0	5556
Estimated Annual Number of Visits (in thousands)	8115	1802	6531	1217	33	13	10	7	8	5	2	8	24	31	0	0	5	41	462	352	0	0	1104	0	19770
Percent of Total Visits	41.0	9.1	33.0	6.2	.2	.1	.1	.0	.0	.0	.0	.0	.1	.2	---	---	.0	.2	2.3	1.8	---	---	5.6	---	99.9
NAMCS																									
Number of Encounters (2 years)	1116	20	772	175	8	1	2	0	0	0	0	0	0	8	0	0	11	25	1	85	13	6	103	0	2346
Estimated Annual Number of Visits (in thousands)	8140	123	4215	798	34	3	8	0	0	0	0	0	0	26	0	0	30	110	2	376	48	105	579	0	14596
Percent of Total Visits	55.8	.8	28.9	5.5	.2	.0	.1	---	---	---	---	---	---	.2	---	---	.2	.8	.0	2.6	.3	.7	4.0	---	100.1

[1] NAMCS data based on 1975 and 1976 surveys. USC data are based on 24 separate surveys conducted between February 1976 and July 1978.

*USC definition is slightly different and they call them Medical Oncologists. USC only included Neoplastic Specialists with medical secondary specialty.

Note: For all specialties NAMCS estimated 14,993,000 annual cases based on a two-year sample of 2,399. These 24 specialties represent 97.4% of all NAMCS pharyngitis and tonsillitis cases.

In general, this series of tables supports the validity of both the USC and NAMCS surveys. The dimensions on which widely different findings are reported tend to be those where error by respondents is most likely or where random variation due to small sample numbers is expected. In addition, similarities are usually pronounced where the survey questions are most similar as in the case with the electrocardiogram, patient gender, and previous contact questions. Given the problems large-scale surveys of physician activity are likely to encounter, the number of similarities between the findings of USC and NAMCS are impressive. The following list of problem areas in comparing USC and NAMCS illustrate possible causes of the observed divergencies:

- NAMCS includes Doctors of Osteopathy (DO) while USC does not.
- USC includes non-office based patient care physicians and NAMCS does not.
- Alaskan and Hawaiian physicians are included for USC but not for NAMCS.
- For NAMCS the physicians' response questionnaire is used to categorize the physicians' specialty while the USC specialty is categorized as from the AMA sampling frame.
- Questionnaire form, choices, and wording differ on many of the questions compared between the surveys.
- Seasonal variation in diagnostic conditions and their treatment can bias USC results.
- The in-scope criteria relevant to encounter location outside a hospital utilized by NAMCS cannot be duplicated for USC.

Many of these problems in comparison can be diminished through careful selection of USC cases. In fact, Tables I-D and I-E are examples of comparisons where more care has been taken in matching the data. In these tables the estimates based on the USC data exclude encounters by physicians who are not office based (from the AMA sample as in NAMCS), not from Alaska and Hawaii, and not currently in the same specialty as that for which they were sampled. In addition, only USC encounters occurring in offices were included. This, however, still leaves several possible biases, including those listed above. In particular, bias remains because it is not possible to match completely the NAMCS in-scope criteria with that for USC.

TABLE I-D

PRECENTAGE OF PHYSICIANS DELIVERING SELECTED COMPONENTS OF CARE FOR THREE CONDITIONS: COMPARISON OF USC AND NAMCS DATA[1]

	X-ray	Lab	Systemic Drugs	Injec-tions	Electro-cardio-gram	N[2]
Essential Benign Hypertension						
(Internists Only)						
USC	14.4	25.4	73.3	1.8	15.7	763 (1779)
NAMCS	7.4	28.6	53.7	4.6	15.1	1544
Ischemic Heart Disease						
(Internists Only)						
USC	15.3	36.9	64.5	3.4	30.9	508 (1137)
NAMCS	9.2	31.7	52.0	7.4	30.2	1276
Tonsillitis and Pharyngitis						
(Pediatricians Only)						
USC	.6	64.8	66.0	16.4	.0	1069 (2048)
NAMCS	.5	35.6	74.9	20.1	.0	772

---

[1] NAMCS data based on 1975 and 1976 surveys. USC data based on February and March 1978 Internal Medicine Survey and November and December 1977 Pediatrics Survey.

[2] Numbers in this column for USC are the deflated sample number. This compensates for the differential sampling rates and deflates the N to the lowest strata sampling rate. See Table IV-1 for more details. The numbers in parentheses represent the total sample N.

TABLE I-E

PERCENTAGE OF PHYSICIANS REPORTING SELECTED ENCOUNTER CHARACTERISTICS FOR THREE CONDITIONS: COMPARISON OF USC AND NAMCS DATA

	Male Patient	Second Diagnosis Present[1]	Seen Patient Before	Encounter Duration (minutes)					
				1 - 5	6 - 10	11 - 15	16 - 30	31 - 60	Over 60
Essential Benign Hypertension									
(Internists Only)									
USC	40.8	40.0	94.2	14.8	27.1	33.7	16.7	7.4	.3
NAMCS	39.5	53.2	94.9	4.2	24.0	42.4	21.1	7.3	1.0
Ischemic Heart Disease									
(Internists Only)									
USC	50.6	56.7	96.1	4.3	20.0	42.6	24.7	8.0	.4
NAMCS	54.9	68.2	95.5	3.4	18.0	40.2	31.1	6.6	.6
Tonsillitis and Pharyngitis									
(Pediatricians Only)									
USC	50.3	22.5	92.5	24.8	54.1	17.8	3.2	0.0	.0
NAMCS	51.3	34.2	92.3	14.0	46.9	31.7	7.0	0.3	.0

---

[1] These differences may have more to do with survey procedures for coders than actual physician response differences.

APPENDIX II

ACTIVITIES OF FEMALE AND EMERGENCY PHYSICIANS

FEMALE AND EMERGENCY PHYSICIANS

This appendix presents findings on medical activities by female and emergency physicians. Both female and emergency practitioners play important roles in the health care system today in that their practices reflect major issues in the delivery of health care. The recent, large-scale entry of women into the medical profession raises the issue of whether they act differently from men in their roles as physicians. The treatment by emergency physicians of many nonemergent conditions raises the issue of whether patients seeking ambulatory care through hospital emergency departments receive different services than they would in more traditional settings. This appendix provides basic information in both areas.

Female Versus Male Physicians

Tables II-A and II-B provide indications of differences in practice patterns between female and male physicians. For each tracer condition, the research team ran regression equations predicting component of care and encounter time on the basis of gender, specialty, and a variety of physician, patient, and practice characteristics. Tables II-A and II-B present only the coefficients representing gender.

The tables present several statistically significant differences between males and females. On first office visits for asthma, women provide more X-rays; for first office visits for tonsillitis and pharyngitis, and for pneumonia treated in the hospital, they order fewer cultures. They spend more time in encounters with tonsillitis and pharyngitis patients on first office visits, and on follow-up visits in the hospital for patients with pneumonia. On first visits for pneumonia, they

TABLE II-A

COEFFICIENTS FROM REGRESSION EQUATIONS[1] INDICATING THE EFFECTS OF PHYSICIAN GENDER (MALE=0, FEMALE=1) ON COMPONENTS OF CARE FOR SEVEN TRACER CONDITIONS, FIRST VISITS[2]

	Components of Care				
Tracer Conditions[3]	X-Ray	Electro-Cardiogram	Culture	Systemic Drugs	Visit Duration
Hypertension (N=838)	-.004	-.04	---	-.08	-1.49
Ischemic Heart Disease (N=542)	.11	-.03	---	.002	2.48
Asthma (N=259)	.30***	---	---	.06	-.58
Tonsillitis and Pharyngitis (N=2783)	-.01	---	-.09*	.02	1.67***
Nasopharyngitis & URI (N=2630)	-.002	---	.02	-.004	.25
Low Back Pain (N=611)	.02	---	---	---	-2.10
Pneumonia					
Office (N=1274)	-.01	---	.00	.09*	.53
Hospital (N=255)	.09	---	-.36**	.35*	-2.92

*p <.05
**p <.01
***p <.001

[1] Numbers in tables are unstandardized partial regression coefficients from equations predicting the provision of specified components of care. In addition to the variables representing gender, these equations include specialty, physician age, board certification, practice mode (solo vs. other), patient age and sex, presence of comorbid conditions, severity, complexity, and urgency of case, and patient source (referral vs. self). Significance levels refer to those associated with the gender variable as determined according to the F-test.

[2] Includes only visits in office unless otherwise specified.

[3] The percentage of visits seen by female physicians for conditions and sites listed in order below are 2.3, 2.3, 5.1, 5.0, 5.0, 1.7, 9.6 and 5.3.

TABLE II-8

COEFFICIENTS FROM REGRESSION EQUATIONS[1] INDICATING THE EFFECTS OF PHYSICIAN GENDER (MALE=0, FEMALE=1) ON COMPONENTS OF CARE FOR SEVEN TRACER CONDITIONS, FOLLOW-UP VISITS[2]

	Components of Care				
Tracer Conditions[3]	X-Ray	Electro-Cardiogram	Culture	Systemic Drugs	Visit Duration
Hypertension (N=2513)	.02	.14***	---	-.02	1.16
Ischemic Heart Disease (N=1884)	.20***	.19*	---	.07	.90
Asthma (N=298)	-.02	---	---	-.10	-1.09
Tonsillitis and Pharyngitis (N=345)	-.003	---	-.15	.13	.14
Nasopharyngitis & URI (N=368)	-.02	---	-.003	.16	1.33
Low Back Pain (N=638)	-.25	---	---	---	1.52
Pneumonia					
Office (N=501)	-.13	---	.08**	-.06	.16
Hospital (N=767)	.10	---	.11	.08	34.45***

*p <.05
**p <.01
***p <.001

[1] Numbers in tables are unstandardized partial regression coefficients from equations predicting the provision of specified components of care. In addition to the variables representing gender, these equations include specialty, physician age, board certification, practice mode (solo vs. other), patient age and sex, presence of comorbid conditions, severity, complexity, and urgency of case, patient source (referral vs. self), and number of visits for this problem. Significance levels refer to those associated with the gender variable as determined according to the F-test.

[2] Includes only visits in office unless otherwise specified.

[3] The percentage of visits seen by female physicians for those conditions and sites listed below in order are: 2.8, 1.6, 5.4, 8.9, 6.2, .9, 10.8, and 2.2.

prescribe more systemic drugs, both in the office and the hospital. While the tables do show significant differences, the research team was unable to define a consistently patterned difference between males and females.

As in preceding chapters, the research team ran equations predicting productivity and labor supply. Coefficients from these equations appear in Tables II-C and II-D. The tables are based on responses of pediatricians alone. Of the six specialties only pediatrics included enough records of females (viz., 35) with sufficient data for economic analysis. The tables suggest that female physicians see somewhat fewer patients than males, and work somewhat fewer hours. But gender is not significant in either table. Data including greater numbers of females will be needed for definitive findings.

Emergency Physicians

Tables II-E through II-I present coefficients from regression equations predicting components of care for the five tracer conditions in which emergency physicians treated 100 or more cases without comorbidity according to the USC files. Dummy variables for all specialties except emergency medicine who treated 100 or more cases were included in the equations; coefficients on these variables represent differences from emergency physicians whose representative variable was omitted from the equations. The emergency room was considered the emergency medicine physician's office in this analysis. After the usual array of control variables have explained all they can, emergency physicians show a clear pattern of practice. For nearly all tracers, on first visit, they give more tests and prescribe fewer systemic drugs, and provide more injections than the other specialties. They show a consistent tendency to hospitalize patients more frequently than other specialties.

TABLE II-C

COEFFICIENTS FROM REGRESSION EQUATIONS PREDICTING PRODUCTIVITY (NATURAL LOG OF WEEKLY VISITS) AMONG PEDIATRICIANS, GENDER VARIABLE INCLUDED

Independent Variable	Coefficient	(F-statistic)
Constant	-.25	(.01)
ln Actual Hours	2.18	(11.3)***
Actual Hours	-.035	(6.9)**
FTE Aides	.17	(14.0)***
FTE Aides^2	-.019	(9.6)**
Experience	.02	(6.4)*
Experience^2	-.0005	(7.9)**
Size of Group	-.007	(2.0)
Size of Group^2	.00004	(.4)
Board Certification	.08	(1.9)
% Hospital Visits	.005	(5.3)*
Case Mix Specialization	.014	(1.6)
ln Expected Encounter Time	-.828	(2.5)
Physician Gender (1=Female)	-.065	(.8)

F-statistic	7.1***
Adjusted R^2	.25
Mean Total Visits	151
Number of Observations	245

---

*p <.05
**p <.01
***p <.001

TABLE II-D

COEFFICIENTS FROM REGRESSION EQUATIONS PREDICTING LABOR SUPPLY (NATURAL LOG OF USUAL HOURS WORKED) AMONG PEDIATRICIANS, GENDER VARIABLE INCLUDED

Independent Variable	Coefficient	(F-statistic)
Constant	3.0	(12.6)***
ln Price	-.10	(.8)
ln State Price Index	-.105	(.7)
Nurses/Population	-.00002	(.1)
Experience	.008	(2.5)
Experience^2	-.0002	(3.4)
Specialist/Population	-.006	(1.6)
Size of Group	.0003	(.1)
Size of Group^2	-.3E-6	(.2)
Board Certification	-.02	(.5)
Case Mix Specialization	-.002	(.1)
ln Expected Encounter Time	.757	(7.6)**
Physician Gender (1=Female)	-.078	(3.2)
F-statistic	2.1	
Adjusted R^2	.04	
Mean Usual Hours	48.9	
Number of Observations	280	

---

*$p<.05$
**$p<.01$
***$p<.001$

Because of these differences between the setting and organization of emergency medicine from other specialties, the research team performed no analysis of the productivity and labor supply of emergency physicians. Such analysis could not have been performed in the standard manner of Chapter III, since variables such as FTE aides would have been nearly impossible to estimate.

TABLE II-E

COEFFICIENTS FROM REGRESSION EQUATIONS PREDICTING COMPONENTS OF CARE FOR ASTHMA (ICDA=493) AMONG EMERGENCY AND OTHER PHYSICIANS OFFICE FIRST VISIT (N=329)

	Chest X-ray		Laboratory Tests		Systemic Drugs		Injection Other		Referral	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	.27		.07		.20		.28		.63	
Physician Specialty:										
Family Practice	-.24	(14.60)***	-.04	(.57)	.53	(43.05)***	-.52	(42.86)***	-.64	(113.64)***
Pediatrics	-.19	(11.61)***	-.02	(.15)	.47	(41.02)***	-.23	(10.23)**	-.57	(108.11)***
Internal Medicine	-.04	(.35)	.08	(1.47)	.58	(34.71)***	-.54	(29.97)***	-.55	(55.82)***
Physician Characteristics:										
Age	-.003	(2.79)	.000	(.10)	-.003	(1.76)	.002	(1.03)	-.002	(1.48)
Solo Practice	-.01	(.03)	-.01	(.02)	-.12	(4.14)*	-.04	(.45)	.01	(.04)
Patient Characteristics:										
Age	.002	(1.54)	.000	(.05)	-.003	(2.72)	.000	(.01)	.002	(1.90)
Sex (male=0, female=1)	.02	(.24)	-.06	(3.46)	.03	(.28)	-.02	(.11)	-.07	(3.70)
Multiple Conditions	-.01	(.04)	-.004	(.01)	-.02	(.11)	.08	(1.66)	-.05	(.98)
Severity-Complexity	.07	(5.79)*	.10	(13.49)***	.03	(.64)	-.01	(.08)	.03	(1.15)
Urgency	-.004	(.03)	-.04	(3.29)	.06	(3.51)	.12	(12.22)***	.03	(1.57)
Encounter Characteristics:										
Office Visit	---		---		---		---		---	
Professional Referral	-.01	(.03)	-.05	(.68)	-.10	(1.19)	-.001	(.000)	.16	(4.95)*
Number of Visits	---		--		---		---		---	
F-statistic	3.96***		2.19*		6.82***		8.83***		20.30***	
Adjusted R^2	.09		.04		.16		.21		.39	
Mean of Dep. Var.	.15		.10		.62		.43		.24	

---

*p<.05; **p<.01; ***p<.001

[1] Office for emergency medicine is defined as the emergency room.

TABLE II-F

COEFFICIENTS FROM REGRESSION EQUATIONS PREDICTING COMPONENTS OF CARE FOR TONSILLITIS AND PHARYNGITIS (ICDA=462, 463) AMONG EMERGENCY AND OTHER PHYSICIANS OFFICE FIRST VISIT[1] (N=3015)

Independent Variables	Chest X-ray		Laboratory Tests		Cultures		Systemic Drugs		Injection Other	
	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	.04		.004		.67		.35		.03	
Physician Specialty:										
Family Practice	-.08	(91.25)***	-.04	(2.83)	-.08	(4.63)*	.10	(8.36)**	-.15	(32.43)***
Pediatrics	-.07	(88.80)***	-.08	(10.99)***	.23	(41.35)***	-.08	(5.89)*	-.22	(67.09)***
Internal Medicine	-.07	(46.95)***	-.02	(.57)	.03	(.32)	.08	(2.89)	-.21	(33.96)***
Physician Characteristics:										
Age	-.000	(.34)	.002	(7.79)**	-.01	(49.47)***	.002	(3.41)	.002	(9.12)**
Solo Practice	.01	(3.99)*	-.03	(5.38)*	-.05	(6.56)*	.02	(1.17)	.01	(1.02)
Patient Characteristics:										
Age	.001	(20.51)***	.002	(13.03)***	.002	(3.90)*	-.001	(.48)	-.001	(.93)
Sex (male=0, female=1)	-.01	(3.63)	-.005	(.18)	.005	(.07)	-.0[illegible]	(.89)	-.01	(1.19)
Multiple Conditions	.02	(16.35)***	.07	(23.89)***	-.06	(8.31)**	.06	(7.37)**	-.02	(1.18)
Severity-Complexity	.01	(5.97)*	.02	(9.13)**	.01	(1.36)	.04	(15.15)***	.05	(33.96)***
Urgency	.01	(5.57)*	.01	(.35)	.01	(.15)	.08	(27.98)***	.05	(17.63)***
Encounter Characteristics:										
Office Visit	---		---		---		---		---	
Professional Referral	.02	(1.94)	.03	(.66)	.09	(2.56)	-.06	(1.26)	.01	(.05)
Number of Visits	---		---		---		---		---	
F-statistic	5.34***		8.03***		25.44***		13.06***		12.29***	
Adjusted R^2	.05		.03		.08		.04		.04	
Mean of Dep. Var.	.01		.11		.54		.70		.16	

---

*p<.05; **p<.01; ***p<.001

[1] Office for emergency medicine is defined as the emergency room.

TABLE II-F (cont.)

	Referral	
Independent Variables	Coeff	(F)
Constant	.55	
Physician Specialty:		
Family Practice	-.51	(1365.87)***
Pediatrics	-.50	(1372.66)***
Internal Medicine	-.50	(724.23)***
Physician Characteristics:		
Age	-.001	(14.58)***
Solo Practice	-.01	(.71)
Patient Characteristics:		
Age	-.000	(1.92)
Sex (male=0, female=1)	-.005	(.51)
Multiple Conditions	.02	(8.60)**
Severity-Complexity	-.001	(.04)
Urgency	.01	(3.22)
Encounter Characteristics:		
Office Visit	---	
Professional Referral	.23	(116.43)***
Number of Visits	-	
F-statistic	167.30***	
Adjusted R^2	.38	
Mean of Dep. Var.	.06	

*p<.05; **p<.01; ***p<.001

TABLE II-G

COEFFICIENTS FROM REGRESSION EQUATIONS PREDICTING COMPONENTS OF CARE FOR URI AND NASOPHARYNGITIS (ICDA=460, 465) AMONG EMERGENCY AND OTHER PHYSICIANS OFFICE FIRST VISIT[1] (N=2814)

	Chest X-ray		Laboratory Tests		Cultures		Systemic Drugs		Injection Other	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	.16		-.03		.09		.39		-.10	
Physician Specialty:										
Family Practice	-.21	(197.85)***	-.04	(2.60)	-.04	(2.05)	.30	(71.49)***	.02	(1.28)
Pediatrics	-.20	(167.31)***	-.07	(7.69)**	.06	(3.96)*	.11	(9.27)**	-.04	(3.24)
Internal Medicine	-.16	(96.23)***	-.05	(2.64)	-.04	(1.40)	.31	(62.31)***	-.06	(5.52)*
Physician Characteristics:										
Age	-.000	(.14)	.001	(5.28)*	-.000	(.30)	-.000	(.04)	.002	(17.08)***
Solo Practice	-.01	(1.40)	-.03	(5.52)*	.01	(.92)	-.002	(.01)	.02	(2.70)
Patient Characteristics:										
Age	.001	(19.65)***	.000	(1.38)	-.001	(4.93)*	-.000	(.40)	.001	(17.74)***
Sex (male=0, female=1)	.002	(.07)	.001	(.002)	.005	(.14)	.002	(.01)	.001	(.01)
Multiple Conditions	-.01	(.53)	.05	(10.65)***	-.01	(.31)	.05	(5.27)*	-.002	(3.13)
Severity-Complexity	.03	(23.07)***	.04	(16.41)***	.01	(.64)	.02	(2.58)	.01	(1.58)
Urgency	.005	(.97)	.03	(9.69)**	.03	(11.40)***	.03	(8.05)**	.02	(10.44)***
Encounter Characteristics:										
Office Vist	---		---		---		---		---	
Professional Referral	.01	(.09)	-.04	(.89)	.02	(.18)	-.000	(.000)	-.03	(.61)
Number of Visits	---		---		---		---		---	
F-statistic	25.57***		7.54***		7.73***		16.25***		11.93***	
Adjusted R^2	.09		.02		.03		.06		.04	
Mean of Dep. Var.	.04		.11		.14		.72		.08	

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*p<.05; **p<.01; ***p<.001

[1] Office for emergency medicine is defined as the emergency room.

TABLE II-G (cont.)

Independent Variables	Referral Coeff	 (F)
Constant	.50	
Physician Specialty:		
Family Practice	-.40	(963.82)***
Pediatrics	-.40	(880.48)***
Internal Medicine	-.41	(762.20)***
Physician Characteristics:		
Age	-.002	(25.95)***
Solo Practice	.01	(1.83)
Patient Characteristics:		
Age	.000	(.002)
Sex (male=0, female=1)	-.01	(1.43)
Multiple Conditions	.03	(12.78)***
Severity-Complexity	.005	(.86)
Urgency	-.01	(8.64)**
Encounter Characteristics:		
Office Visits	---	
Professional Referral	.09	(17.52)***
Number of Visits	---	
F-statistic	103.88***	
Adjusted R^2	.29	
Mean of Dep. Var.	.04	

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*p<.05; **p<.01; ***p<.001

TABLE II-H

COEFFICIENTS FROM REGRESSION EQUATIONS PREDICTING COMPONENTS OF CARE FOR LOW BACK PAIN (ICDA=VARIOUS) AMONG EMERGENCY AND OTHER PHYSICIANS OFFICE FIRST VISIT[1] (N=759)

	Chest X-ray		Counseling		Hospital-ization		Referral	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	.47		.13		-.03		.50	
Physician Specialty:								
Family Practice	-.49	(94.77)***	.27	(29.43)***	-.04	(4.27)*	-.60	(215.49)***
Internal Medicine	-.43	(55.42)***	.25	(18.79)***	-.04	(3.02)	-.55	(142.17)***
Orthopedic Surgery	-.07	(1.85)	.27	(28.80)***	-.06	(8.28)**	-.53	(166.96)***
Physician Characteristics:								
Age	.002	(1.04)	-.003	(2.51)	-.000	(.40)	.003	(4.51)*
Solo Practice	-.01	(.14)	-.01	(.09)	-.01	(.14)	-.02	(.52)
Patient Characteristics:								
Age	-.000	(.14)	-.001	(.23)	.001	(3.59)	.000	(.003)
Sex (male=0, female =1)	-.10	(8.30)**	.01	(.08)	.004	(.08)	-.02	(.46)
Multiple Conditions	-.03	(.53)	.06	(1.64)	-.05	(.10)	.04	(1.13)
Severity-Complexity	.08	(13.16)***	.04	(2.85)	.02	(4.13)*	.03	(2.59)
Urgency	.04	(4.04)*	.01	(.14)	.02	(4.59)*	-.03	(4.47)*
Encounter Characteristics:								
Office Visit	---		---		---		---	
Professional Referral	-.07	(2.46)	-.11	(5.54)*	.06	(12.19)***	.16	(18.06)***
Number of Visits	--		---		--		---	
F-statistic	18.48***		4.84***		3.34***		28.28***	
Adjusted R^2	.20		.05		.03		.28	
Mean of Dep. Var.	.49		.30		.03		.23	

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*p<.05; **p<.01; ***p<.001

[1] Office for emergency medicine is defined as the emergency room.

TABLE II-1

COEFFICIENTS FROM REGRESSION EQUATIONS PREDICTING COMPONENTS OF CARE FOR PNEUMONIA (ICDA=480-486) AMONG EMERGENCY AND OTHER PHYSICIANS OFFICE FIRST VISIT[1] (N=1350)

	Chest X-ray		Laboratory Tests		Cultures		Systemic Drugs		Injection Other	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	.54		.22		.02		.25		.15	
Physician Specialty:										
Family Practice	-.33	(49.22)***	-.32	(36.37)***	-.04	(.67)	.29	(15.52)***	-.23	(30.17)***
Internal Medicine	-.23	(20.07)***	-.27	(22.84)***	.02	(.10)	.27	(11.35)***	-.31	(45.96)***
Pediatrics	-.66	(224.17)***	-.41	(69.33)***	.05	(.88)	.23	(11.13)***	-.28	(48.52)***
Physician Characteristics:										
Age	-.002	(5.15)*	.001	(1.55)	-.000	(.27)	-.002	(1.65)	.002	(7.52)**
Solo Practice	-.04	(3.98)*	.04	(3.57)	.02	(.80)	.01	(.03)	.01	(.58)
Patient Characteristics:										
Age	.001	(1.62)	.002	(4.55)*	.000	(.03)	-.002	(2.18)	-.000	(.30)
Sex (male=0, female=1)	.01	(.10)	.01	(.26)	.01	(.58)	-.02	(.44)	.02	(2.55)
Multiple Conditions	-.07	(11.33)***	-.03	(1.57)	.04	(3.17)	.03	(1.14)	-.04	(4.81)*
Severity-Complexity	.09	(32.65)***	.08	(19.05)***	-.001	(.004)	-.01	(.11)	.02	(1.52)
Urgency	.06	(25.37)***	.05	(12.38)***	.03	(3.60)	.11	(31.54)***	.03	(6.32)*
Encounter Characteristics:										
Office Visit	---		---		---		---		---	
Professional Referral	.04	(.82)	.02	(.22)	-.02	(.24)	-.08	(1.24)	.03	(.78)
Number of Visits	---		---		---		---		---	
F-statistic	88.52***		30.32***		1.28		6.10***		11.07***	
Adjusted R^2	.42		.19		.00		.04		.08	
Mean of Dep. Var.	.18		.16		.12		.66		.08	

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*p<.05; **p<.01; ***p<.001

[1] Office for emergency medicine is defined as the emergency room.

TABLE II-1 (cont.)

	Referral	
Independent Variables	Coeff	(F)
Constant	.70	
Physician Specialty:		
Family Practice	-.69	(580.44)***
Internal Medicine	-.70	(500.82)***
Pediatrics	-.69	(636.80)***
Physician Characteristics:		
Age	-.000	(.62)
Solo Practice	.03	(5.67)*
Patient Characteristics:		
Age	.000	(.83)
Sex (male=0, female=1)	-.002	(.06)
Multiple Conditions	.01	(1.16)
Severity-Complexity	.01	(1.46)
Urgency	-.002	(.04)
Encounter Characteristics:		
Office Visit	---	
Professional Referral	.14	(27.41)***
Number of Visits	---	
F-statistic	107.72***	
Adjusted R^2	.47	
Mean of Dep. Var.	.07	

*p<.05; **p<.01; ***p<.001

APPENDIX III

SUPPLEMENTARY TABLES TO CHAPTER III

NOTE ON TABLES III-A THROUGH III-I

Tables III-A through III-E present the distribution of primary presenting conditions which the five specialties examined in this chapter reported in the USC surveys. Frequencies are presented for the fifty most frequent primary conditions seen by each specialty, and for a residual category including all other cases. The distributions illustrated in Tables III-1-A through III-1-E form the basis for computation of the case mix index in Chapter III.

Tables III-F through III-I are estimates of alternative specifications of the regressions shown in Tables III-5, III-6 and III-8.

TABLE III-A
DISTRIBUTION OF PRIMARY CONDITIONS SEEN BY FAMILY PRACTITIONERS

RANK ORDER*	ICDA	DIAGNOSIS	RELATIVE FREQUENCY	CUMULATIVE FREQUENCY	NUMBER OF ENCOUNTERS	MEAN ENCOUNTER TIME
1	1000	Medical or Special Examination	8.6	8.6	2471	13.4
2	465	Acute URI-Multiple/Unspec Sites	4.9	13.6	1411	8.6
3	401	Essential Benign Hypertension	4.5	18.1	1292	10.9
4	1006	Prenatal Care	3.2	21.2	911	10.7
5	250	Diabetes Mellitus	2.3	23.6	665	11.7
6	462	Acute Pharyngitis	2.1	25.7	604	8.3
7	412	Chronic Ischemic Heart Disease	1.9	27.6	538	11.6
8	300	Neuroses	1.7	29.2	479	13.8
9	491	Chronic Bronchitis	1.8	31.0	507	9.7
10	427	Symptomatic Heart Disease	1.4	32.4	405	11.4
11	1010	Medical and Surgical Aftercare	1.5	34.0	442	10.2
12	9	Diarrheal Disease	1.4	35.3	390	12.3
13	381	Otitis Media W/O Mastoiditis	1.3	36.6	361	8.3
14	486	Pneumonia, Unspecified	1.3	37.9	371	10.9
15	463	Acute Tonsillitis	1.1	39.0	328	8.1
16	692	Other Exzema and Dermatitis	1.1	40.1	323	8.8
17	847	Sprain/Strain Oth/Unspec Back	1.1	41.3	317	11.1
18	436	Acute, Ill-Defin Cerebrovasc Dis	.9	42.2	267	10.6
19	599	Other Urinary Tract Diseases	.8	42.9	216	10.2
20	277	Obesity, Not Endocrine Origin	.8	43.7	218	10.9
21	785	Sym Ref To ABD/Lower GI Tract	.7	44.4	207	13.9
22	1020	Single Born, W/O Immaturity	.9	45.3	248	9.6
23	715	Arthritis, Unspecified	.8	46.1	222	11.2
24	595	Cystitis	.8	46.9	233	10.0
25	1007	Postpartum Observation	1.0	47.9	290	8.8
26	783	Sym Ref to Respiratory Sys	.7	48.6	214	12.9
27	79	Other Viral Diseases	.8	49.4	223	9.8
28	713	Osteoarthritis and Allied Cond	.8	50.2	231	11.8
29	410	Acute Myocardial Infarction	.8	51.0	226	12.5
30	731	Synovitis, Bursitis and Tenosynd	.7	51.7	196	11.0
31	493	Asthma	.6	52.3	185	11.5
32	780	Certain Sym Ref-NS/Spec Senses	.6	52.9	172	12.8
33	622	Inf Dis-Uter/Vag/Vulv-Exc Cerv	.6	53.5	165	11.9
34	507	Hay Fever	.7	54.2	192	7.6
35	490	Bronchitis, Unqualified	.7	54.9	194	9.4

TABLE III-A (continued)

RANK ORDER	ICDA	DIAGNOSIS	RELATIVE FREQUENCY	CUMULATIVE FREQUENCY	NUMBER OF ENCOUNTERS	MEAN ENCOUNTER TIME
36	466	Acute Bronchitis/Bronchiolitis	.5	55.4	151	10.1
37	535	Gastritis and Duodenitis	.5	55.9	156	10.7
38	788	Other General Symptoms	.5	56.4	136	11.4
39	492	Emphysema	.6	57.0	172	11.0
40	790	Nervousness and Debility	.6	57.6	168	14.2
41	848	Oth/Ill-Def Sprain/Strain	.5	58.1	136	10.1
42	626	Disorders of Menstruation	.5	58.6	153	13.1
43	728	Vertebrogenic Pain Syndrome	.5	59.1	143	11.8
44	503	Chronic Sinusitis	.5	59.6	143	8.6
45	706	Diseases of Sebaceous Glands	.5	60.1	133	11.6
46	682	Other Cellulitis and Abscess	.5	60.6	143	9.4
47	460	Acute Nasopharyngitis	.3	60.9	90	9.5
48	1002	Prophylactic Inoc/Vacc	.4	61.3	121	4.3
49	309	Ment Dis-Nonpsycho-W/Phys Cond	.5	61.8	149	8.7
50	791	Headache	.4	62.3	122	11.8
--	----	Residual	37.7	100.0	10809	12.0
--	----	Total	100.0	100.0	28639	11.3
--	----	Office Encounters	73.4	73.4	21030	10.9
--	----	Hospital Encounters	26.6	26.6	7609	6.4

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*Rank order in Tables III-A through III-E is obviously not based on relative frequency as shown in these tables. Instead, it is the rank order if all sample physicians in the specialty are included, i.e., not just the office-based practitioners in these tables.

TABLE III-8
DISTRIBUTION OF PRIMARY CONDITIONS SEEN BY INTERNISTS

RANK ORDER	ICDA	DIAGNOSIS	RELATIVE FREQUENCY	CUMULATIVE FREQUENCY	NUMBER OF ENCOUNTERS	MEAN ENCOUNTER TIME
1	401	Essential Benign Hypertension	7.3	7.3	1964	16.0
2	412	Chronic Ischemic Heart Disease	6.2	13.4	1668	16.7
3	250	Diabetes Mellitus	4.2	17.7	1147	15.8
4	1000	Medical or Special Examination	4.3	22.0	1167	27.2
5	410	Acute Myocardial Infarction	2.9	24.9	794	15.9
6	427	Symptomatic Heart Disease	2.7	27.6	724	16.8
7	465	Acute URI-Multiple/Unspec Sites	1.8	29.4	499	11.9
8	300	Neuroses	2.1	31.6	574	18.6
9	486	Pneumonia, Unspecified	1.8	33.4	486	13.4
10	492	Emphysema	2.0	35.3	529	15.1
11	713	Osteoarthritis and Allied Cond	1.6	36.9	435	18.8
12	436	Acute, Ill-Defin Cerebrovasc Dis	1.3	38.3	358	12.8
13	470	Influenza, Unqualified	1.1	39.3	285	12.2
14	174	Malignant Neoplasm-Breast	.9	40.2	242	14.5
15	783	Sym Ref to Respiratory Sys	1.1	41.3	308	20.1
16	493	Asthma	.9	42.2	232	16.6
17	490	Bronchitis, Unqualified	1.0	43.2	283	13.1
18	277	Obesity, Not Endocrine Origin	.9	44.1	240	22.1
19	785	Sym Ref to ABD/Lower GI Tract	.9	45.1	251	18.0
20	466	Acute Bronchitis/Bronchiolitis	.9	45.9	231	12.9
21	153	Mal Neopl-LG Intest, Exc Rectum	.8	46.7	210	13.3
22	462	Acute Pharyngitis	.7	47.4	183	10.0
23	303	Alcoholism	.6	47.9	156	12.6
24	162	Mal Neopl-Trach, Bronch, Lung	.7	48.6	177	13.2
25	712	Rheum Arthritis and Allied Cond	.8	49.4	215	17.0
26	571	Cirrhosis of Liver	.5	49.9	130	16.0
27	413	Angina Pectoris	.5	50.4	145	17.7
28	820	Fracture of Neck of Femur	.6	51.0	156	12.4
29	782	Sym Ref To Cardiovas/Lymph Sys	.6	51.5	151	18.5
30	569	Oth Dis-Intestines/Peritoneum	.6	52.1	149	16.1
31	451	Phlebitis and Thrombophlebitis	.6	52.7	170	13.8
32	305	Physical Dis-Presum Psych Orig	.7	53.4	176	20.0
33	715	Arthritis, Unspecified	.6	53.9	149	15.3
34	780	Certain Sym Ref-NS/Spec Senses	.6	54.5	156	15.6
35	450	Pulmonary Embolism/Infarction	.6	55.1	160	13.3

TABLE III-B (continued)

RANK ORDER	ICDA	DIAGNOSIS	RELATIVE FREQUENCY	CUMULATIVE FREQUENCY	NUMBER OF ENCOUNTERS	MEAN ENCOUNTER TIME
36	788	Other General Symptoms	.5	55.6	148	17.3
37	244	Myzedema	.5	56.1	131	18.2
38	437	General Ischemic Cerebrovasc Dis	.5	56.6	140	14.7
39	728	Vertebrogenic Pain Syndrome	.5	57.1	135	19.0
40	692	Other Eczema and Dermatitis	.4	57.6	118	9.8
41	402	Hypertensive Heart Disease	.5	58.1	135	15.8
42	599	Other Urinary Tract Diseases	.3	58.4	93	14.8
43	564	Funct Disord of Intestines	.5	58.9	130	19.9
44	9	Diarrheal Disease	.5	59.4	146	15.0
45	574	Cholelithiasis	.5	59.9	124	14.3
46	285	Other and Unspecified Anemias	.4	60.3	113	15.5
47	1010	Medical and Surgical Aftercare	.5	60.8	126	14.8
48	440	Arteriosclerosis	.4	61.2	121	13.9
49	717	Other Nonarticular Rheumatism	.5	61.7	138	15.2
50	731	Synovitis, Bursitis and Tenosyno	.5	62.3	147	14.9
--	----	Residual	37.7	100.0	10200	15.3
--	----	Total	100.0	100.0	27045	16.1
--	----	Office Encounters	56.1	56.1	15184	18.0
--	----	Hospital Encounters	43.9	43.9	11861	14.3

TABLE III-C
DISTRIBUTION OF PRIMARY CONDITIONS SEEN BY CARDIOLOGISTS

RANK ORDER	ICDA	DIAGNOSIS	RELATIVE FREQUENCY	CUMULATIVE FREQUENCY	NUMBER OF ENCOUNTERS	MEAN ENCOUNTER TIME
1	412	Chronic Ischemic Heart Disease	24.2	24.2	1855	20.0
2	427	Symptomatic Heart Disease	9.1	33.3	701	21.2
3	401	Essential Benign Hypertension	7.1	40.4	545	20.4
4	410	Acute Myocardial Infarction	7.2	47.6	555	19.7
5	413	Angina Pectoris	4.1	51.8	315	24.5
6	402	Hypertensive Heart Disease	2.4	54.1	182	17.9
7	1000	Medical or Special Examination	2.4	56.5	183	25.7
8	250	Diabetes Mellitus	1.7	58.2	131	16.5
9	398	Oth HT Dis, Spec Rheumatic	1.7	59.9	127	21.5
10	783	Sym Ref to Respiratory Sys	1.9	61.7	143	26.9
11	436	Acute, Ill-Defin Cerebrovasc Dis	1.5	63.2	112	15.5
12	394	Diseases of Mitral Valve	1.4	64.6	111	24.8
13	450	Pulmonary Embolism/Infarction	1.1	65.7	81	20.8
14	492	Emphysema	1.3	67.0	97	17.8
15	395	Diseases of Aortic Valve	1.3	68.2	96	26.2
16	425	Cardiomyopathy	1.2	69.4	89	25.0
17	300	Neuroses	.7	70.1	57	19.1
18	1010	Medical and Surgical Aftercare	1.0	71.1	73	16.3
19	451	Phlebitis and Thrombophlebitis	.6	71.7	45	13.8
20	746	Congenital Anomalies of Heart	.5	72.2	41	22.9
21	569	Oth Dis-Intestines/Peritoneum	.6	72.7	43	14.9
22	411	Oth Acute/Subac Ischem HT Dis	.6	73.3	43	15.5
23	465	Acute URI-Multiple/Unspec Sites	.6	73.9	44	12.5
24	437	General Ischemic Cerebrovasc Dis	.5	74.4	42	15.7
25	782	Sym Ref to Cardiovas/Lymph Sys	.6	75.0	46	44.3
26	162	Mal Neopl-Trach, Bronch, Lung	.6	75.6	47	14.2
27	443	Oth Periph Vasc Disease	.5	76.1	35	15.2
28	424	Chronic Disease of Endocardium	.5	76.6	35	21.3
29	486	Pneumonia, Unspecified	.5	77.0	38	12.7
30	493	Asthma	.3	77.3	21	15.8
31	438	Oth/Ill-Defin Cerebrovasc Dis	.6	77.9	44	16.3
32	575	Cholecyst/Cholang W/O Calculus	.4	78.3	28	17.0
33	174	Malignant Neoplasm-Breast	.3	78.6	23	14.3
34	713	Osteoarthritis and Allied Cond	.4	79.0	30	16.7
35	712	Rheum Arthritis and Allied Cond	.3	79.2	21	17.2

TABLE III-C (continued)

RANK ORDER	ICDA	DIAGNOSIS	RELATIVE FREQUENCY	CUMULATIVE FREQUENCY	NUMBER OF ENCOUNTERS	MEAN ENCOUNTER TIME
36	562	Diverticula of Intestine	.3	79.5	28	12.9
37	571	Cirrhosis of Liver	.3	79.8	21	20.9
38	305	Physical Dis-Presum Psych Orig	.3	80.1	24	31.5
39	188	Malignant Neoplasm-Bladder	.2	80.2	12	16.7
40	519	Other Dis-Respiratory System	.3	80.5	22	19.2
41	421	Acute/Subacute Endocarditis	.3	80.8	24	13.6
42	820	Fracture of Neck of Femur	.3	81.1	23	13.7
43	627	Menopausal Symptoms	0.0	81.1	0	0.0
44	429	Ill-Defined Heart Disease	.4	81.5	27	33.4
45	785	Sym Ref to ABD/Lower GI Tract	.3	81.8	24	18.5
46	440	Arteriosclerosis	.2	82.0	17	19.3
47	490	Bronchitis, Unqualified	.3	82.3	21	18.1
48	9	Diarrheal Disease	.2	82.5	18	20.6
49	747	Oth Congen Anomalies-Circ Sys	.3	82.8	22	19.7
50	433	Cerebral Thrombosis	.3	83.1	23	19.6
--	----	Residual	16.9	100.0	1295	17.0
--	----	Total	100.0	100.0	7673	19.9
--	----	Office Encounters	47.2	47.2	3623	20.4
--	----	Hospital Encounters	52.8	52.8	4050	27.1

TABLE III-D
DISTRIBUTION OF PRIMARY CONDITIONS SEEN BY PEDIATRICIANS

RANK ORDER	ICDA	DIAGNOSIS	RELATIVE FREQUENCY	CUMULATIVE FREQUENCY	NUMBER OF ENCOUNTERS	MEAN ENCOUNTER TIME
1	1000	Medical or Special Examination	26.5	26.5	6774	12.6
2	381	Otitis Media W/O Mastoiditis	10.9	37.4	2781	8.7
3	486	Pneumonia, Unspecified	6.3	43.7	1598	10.0
4	462	Acute Pharyngitis	5.6	49.3	1426	9.0
5	465	Acute URI-Multiple/Unspec Sites	3.8	53.0	958	9.6
6	9	Diarrheal Disease	3.1	56.1	798	11.1
7	491	Chronic Bronchitis	2.9	59.0	743	9.5
8	463	Acute Tonsillitis	2.7	61.8	697	9.3
9	1020	Single Born, w/o Immaturity	1.6	63.4	414	12.9
10	464	Acute Laryngitis & Tracheitis	1.9	65.3	475	9.5
11	493	Asthma	1.4	66.7	361	12.8
12	692	Other Eczema and Dermatitis	1.3	68.0	339	8.7
13	79	Other Viral Diseases	1.0	69.0	252	8.9
14	999	Other Complic-Medical Care	.7	69.7	191	3.6
15	788	Other General Symptoms	.9	70.6	230	10.9
16	466	Acute Bronchitis/Bronchiolitis	.7	71.3	181	10.9
17	490	Bronchitis, Unqualitied	.9	72.2	222	10.7
18	34	Strep Sore Throat/Scarlet Fev	.8	73.0	200	8.9
19	502	Chr Pharyingitis/Nasopharyngit	.9	73.9	225	9.2
20	503	Chronic Sinusitis	.7	74.5	169	9.3
21	785	Sym Ref to Abd/Lower GI Tract	.7	75.2	177	14.1
22	460	Acute Nasopharyngitis	.6	75.8	146	10.4
23	1021	Single Born, Immature	.3	76.1	64	28.5
24	776	Anoxia/Hypoxia w/o Oth Classif	.3	76.4	89	17.9
25	777	Immaturity, Unqualitied	.6	77.0	165	10.6
26	778	Other Conditions-Fetus/Newborn	.4	77.4	100	13.4
27	470	Influenza, Unqualified	.6	78.1	160	9.4
28	780	Certain Sym Ref-Ns/Spec Senses	.5	78.5	121	15.3
29	507	Hay Fever	.6	79.2	162	10.1
30	1010	Medical and Surgical Aftercare	.5	79.7	134	8.6
31	783	Sum Ref to Respiratory Sys	.5	80.2	131	10.4
32	308	Behavior Disord-Childhood	.5	80.7	118	20.6
33	250	Diabetes Mellitus	.3	81.0	72	20.5
34	599	Other Urinary Tract Diseases	.4	81.4	104	11.4
35	360	Conjunctivitis and Ophthalmia	.4	81.8	113	9.3

TABLE III-D (continued)

RANK ORDER	ICDA	DIAGNOSIS	RELATIVE FREQUENCY	CUMULATIVE FREQUENCY	NUMBER OF ENCOUNTERS	MEAN ENCOUNTER TIME
36	360	Conjunctivitis and Ophthalmia	.2	82.0	47	11.5
37	873	Oth/Unspec Laceration Head	.4	82.3	90	11.2
38	684	Impetigo	.3	82.7	84	8.5
39	300	Neuroses	.3	82.9	67	17.5
40	320	Meningitis	.3	83.2	64	22.9
41	289	Oth Dis-Blood/Blood Form Org	.3	83.5	77	10.1
42	485	Bronchopneumonia, Unspecified	.3	83.8	80	10.6
43	204	Lymphatic Leukemia	.1	83.9	23	14.5
44	790	Nervousness and Debility	.2	84.1	50	15.7
45	133	Acariasis	.2	84.3	61	9.1
46	796	Oth, Ill-Def/Unk Caus-Mort/Morb	.0	84.4	12	17.8
47	306	Spec Sym-Not Elsewhere Classif	.2	84.5	46	20.0
48	38	Septicemia	.1	84.7	30	16.9
49	708	Urticaria	.2	84.9	62	9.5
50	384	Other Inflamm Disease of Ear	.2	85.1	61	9.2
--	----	Residual	14.9	100.0	3793	11.9
--	----	Total	100.0	100.0	25537	11.1
--	----	Office Encounters	81.8	81.8	20890	10.6
--	----	Hospital Encounters	18.2	18.2	4647	22.9

TABLE III-E
DISTRIBUTION OF PRIMARY CONDITIONS SEEN BY ORTHOPEDIC SURGEONS

RANK ORDER	ICDA	DIAGNOSIS	RELATIVE FREQUENCY	CUMULATIVE FREQUENCY	NUMBER OF ENCOUNTERS	MEAN ENCOUNTER TIME
1	820	Fracture of Neck of Femur	8.2	8.2	1024	14.5
2	713	Osteoarthritis & Allied Cond	6.8	15.1	850	17.3
3	731	Synovitis, Bursitis & Tenosyno	5.3	20.3	655	12.5
4	836	Dislocation of Knee	4.8	25.2	600	16.4
5	813	Fracture of Radius and Ulna	4.4	29.6	549	12.7
6	823	Fracture of Tibia and Fibula	3.3	32.9	415	13.3
7	725	Intervertebral Disc Displemnt	3.7	36.6	459	14.6
8	728	Vertebrogenic Pain Syndrome	3.3	39.9	407	12.5
9	846	Sprain/Strain Sacroiliac Regn	3.1	42.9	381	13.5
10	847	Sprain/Strain Oth/Unspec Back	3.0	46.0	377	13.1
11	812	Fracture of Humerus	2.4	48.4	303	12.7
12	729	Other Diseases of Joint	2.5	50.9	307	16.3
13	824	Fracture of Ankle	2.4	53.2	294	14.7
14	755	Oth Congen Anomalies-Limbs	1.6	54.8	193	13.9
15	845	Sprain/Strain Ankle & Foot	1.9	56.7	239	11.4
16	816	Fracture of Phalanges of Hand	1.7	58.4	210	11.3
17	996	Other/Unspecified Injury	1.4	59.8	179	13.1
18	738	Other Deformities	1.4	61.2	177	11.2
19	735	Curvature of Spine	1.1	62.3	133	19.1
20	712	Rheum Arthritis & Allied Cond	1.1	63.4	137	18.3
21	814	Fracture of Carpal Bone(s)	1.6	65.0	196	10.8
22	825	FX Tarsal/Metatarsal Bone(s)	1.5	66.5	185	13.7
23	844	Sprain/Strain Knee & Leg	1.3	67.8	165	15.3
24	723	Other Diseases of Bone	1.2	69.0	144	16.9
25	724	Internal Derangement of Joint	1.2	70.2	155	12.5
26	357	Oth Dis-Pns Exc Autonomic	1.2	71.4	145	13.4
27	808	Fracture of Pelvis	1.0	72.4	126	8.4
28	806	FX/FX Disloc-Sp Col W/Sp Cord	.9	73.3	113	11.6
29	754	Clubfoot (Congenital)	.8	74.1	97	13.6
30	826	Fracture of Phalanges of Foot	.9	75.0	114	11.8
31	787	Sym Ref to Limbs/Joints	.9	75.9	111	16.0
32	756	Oth Congen Anoms-Musc/Skel Sys	.7	76.5	81	17.6
33	805	FX/FX Disloc-Sp Col w/O Cord	.6	77.1	76	14.8
34	822	Fracture of Patella	.7	77.9	90	17.8
35	343	Cereb Spastic Infant Paralysis	.2	78.1	27	22.4

TABLE III-E (continued)

RANK ORDER	ICDA	DIAGNOSIS	RELATIVE FREQUENCY	CUMULATIVE FREQUENCY	NUMBER OF ENCOUNTERS	MEAN ENCOUNTER TIME
36	715	Arthritis, Unspecified	.8	78.9	96	12.8
37	815	Fracture of Metacarpal Bone(s)	.7	79.5	82	11.1
38	720	Osteomyelitis and Periostitis	.5	80.0	67	10.5
39	810	Fracture of Clavicle	.7	80.7	84	11.9
40	831	Dislocation of Shoulder	.7	81.4	88	12.3
41	882	Open Wound Hand Except Fingers	.6	82.0	73	14.4
42	927	Contusion-Hip, Thigh, Leg, Ankle	.6	82.6	78	11.2
43	722	Osteochondrosis	.4	83.1	51	10.6
44	842	Sprain/Strain Wrist, Hand	.6	83.7	75	11.0
45	717	Other Nonarticular Rheumatism	.5	84.2	64	12.2
46	891	Open Wound Knee, Leg, Ankle	.4	84.6	48	12.4
47	737	Hallux Valgus and Varus	.5	85.1	66	16.3
48	1000	Medical or Special Examination	.3	85.4	34	7.9
49	682	Other Cellulitis and Abscess	.4	85.8	51	9.0
50	730	Bunion	.4	86.1	44	11.8
--	----	Residual	13.9	100.0	1726	14.2
--	----	Total	100.0	100.0	12441	14.0
--	----	Office Encounters	60.5	60.5	7525	11.7
--	----	Hospital Encounters	39.5	39.5	4916	15.0

TABLE III-F

SPECIALTY PRODUCTION FUNCTION ESTIMATES EXCLUDING EXPECTED ENCOUNTER TIME[1]

Independent Variables	Specialty				
	Family Practice	Internal Medicine	Cardiology	Pediatrics	Orthopedic Surgery
Constant	2.52 (1.7)	1.03 (.2)	5.74 (1.1)	-2.64 (2.0)	-7.13 (5.2)*
ln Actual Hours	.33 (.3)	.80 (.9)	-.81 (.2)	2.31 (12.8)***	3.48 (11.4)***
Actual Hours	.01 (.6)	-.002 (.02)	.03 (.6)	-.04 (8.3)**	-.05 (6.8)**
FTE Aides	.02 (.2)	.10 (7.3)**	.20 (2.5)	.18 (17.4)***	.11 (3.5)
FTE Aides^2	.005 (.6)	-.005 (1.0)	-.025 (1.6)	-.21 (12.2)***	-.005 (.8)
Experience	.03 (16.6)***	.02 (5.6)*	.01 (.2)	.02 (9.8)**	.01 (.4)
Experience^2	-.0006 (9.8)**	-.0004 (4.2)*	-.0002 (.1)	-.0006 (11.0)***	-.00005 (.02)
Size of Group	.006 (1.3)	.006 (6.0)*	.005 (.1)	-.008 (2.8)	.018 (7.4)**
Size of Group^2	-.00004 (2.5)	-.000005 (6.3)*	-.0002 (.2)	.00005 (.7)	-.0001 (5.7)*
Board Certified	.10 (3.5)	-.11 (5.)*	-.25 (2.6)	.09 (2.5)	.16 (2.9)
% Hospital Visits	.005 (9.6)**	.007 (27.6)***	.006 (2.7)	.004 (3.8)	.006 (6.8)**
Case Mix Specialization	.123 (5.9)*	-.074 (1.2)	-.036 (.9)	.006 (.3)	-.047 (.2)

TABLE III-F (continued)

	Specialty				
	Family Practice	Internal Medicine	Cardiology	Pediatrics	Orthopedic Surgery
F-statistic	14.6***	11.4***	1.9	8.0***	6.7***
Adjusted R^2	.38	.29	.13	.24	.36
Mean Total Visits	167	134	113	151	147
Number of Observations	244	288	69	245	112

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[1] Dependent variable = natural logarithm of patients seen during study week.

* $p<.05$
** $p<.01$
*** $p<.001$

TABLE III-G

SPECIALTY PRODUCTION FUNCTION ESTIMATES WITH ACTUAL ENCOUNTER TIME INCLUDED[1]

	Specialty				
Independent Variable	Family Practice	Internal Medicine	Cardiology	Pediatrics	Orthopedic Surgery
Constant	2.9 (3.6)	4.7 (6.9)**	5.3 (2.1)	.6 (.2)	-1.7 (.5)
ln Actual Hours	.75 (2.0)	.39 (.4)	.13 (.01)	1.75 (11.6)***	2.23 (7.6)**
Actual Hours	.004 (.1)	.006 (.3)	.007 (.1)	-.021 (4.0)*	-.026 (3.2)
FTE Aides	.03 (.6)	.05 (3.6)	.04 (.2)	.09 (5.7)*	.08 (3.5)
FTE Aides ^{2}	.001 (.03)	-.001 (.1)	-.002 (.03)	-.009 (3.6)	-.004 (.6)
Experience	.02 (5.2)*	.02 (6.5)*	.02 (2.3)	.01 (1.4)	-.001 (.00)
Experience ^{2}	-.0001 (1.7)	-.0003 (4.2)*	-.0004 (2.0)	-.0002 (2.1)	.0002 (.4)
Size of Group	.004 (.7)	.003 (2.6)	.016 (1.3)	-.006 (2.4)	.007 (1.7)
Size of Group ^{2}	-.00003 (1.7)	-.000002 (2.6)	-.0006 (2.5)	.00007 (1.9)	-.00003 (.7)
Board Certified	.03 (.6)	.001 (.00)	-.15 (2.3)	.01 (.1)	.09 (1.4)
% Hospital Visits	.004 (11.5)***	.002 (5.4)*	.006 (7.3)**	.003 (4.5)*	.006 (10.9)***
Case Mix Specialization	.047 (1.3)	.042 (.7)	-.037 (2.4)	.009 (1.2)	-.087 (1.3)
ln Mean Encounter Time	-.607 (119.8)***	-.820 (254.4)***	-.748 (78.6)	-.667 (136.9)***	-.529 (69.3)***

TABLE III-G (continued)

	Specialty				
	Family Practice	Internal Medicine	Cardiology	Pediatrics	Orthopedic Surgery
F-statistic	30.3***	41.3***	10.6***	23.1***	16.1***
Adjusted R^2	.59	.63	.63	.52	.62
Mean Total Visits	167	134	113	151	147
Number of Observations	244	288	69	245	112

---

[1] Dependent variable = natural logarithm of patients seen during study week.

* p<.05

** p<.01

*** p<.001

TABLE III-H

THE IMPACT OF PRACTICE INPUTS ON ENCOUNTER TIME[1]

	Specialty				
Independent Variable	Family Practice	Internal Medicine	Cardiology	Pediatrics	Orthopedic Surgery
Constant	-1.9	1.2	-3.4	2.2	7.3
	(1.1)	(.3)	(.4)	(1.7)	(3.7)
ln Actual Hours	.75	-.31	1.21	-.72	-2.26
	(1.4)	(.2)	(.4)	(1.6)	(3.3)
Actual Hours	-.013	.007	-.027	.023	.040
	(1.0)	(.3)	(.6)	(3.6)	(3.3)
FTE Aides	.02	-.06	-.21	-.13	-.05
	(.1)	(3.5)	(2.9)	(11.5)***	(.5)
FTE Aides^2	-.007	.004	.030	.016	.004
	(1.3)	(1.1)	(2.5)	(8.9)**	(.3)
Experience	-.02	-.005	.01	-.02	-.02
	(12.9)***	(.3)	(.4)	(9.4)**	(1.1)
Experience^2	.0007	.0001	-.0002	.0005	.0004
	(15.7)***	(.4)	(.3)	(9.7)**	(1.0)
Size of Group	-.004	-.004	.014	.002	-.020
	(.7)	(4.2)*	(.4)	(.2)	(6.4)*
Size of Group^2	.00002	.000003	-.00043	.00004	.00014
	(.8)	(4.7)*	(.6)	(.5)	(6.8)**
Board Certified	-.11	.12	.11	-.11	-.15
	(4.9)*	(8.7)**	(.5)	(5.3)*	(1.7)
% Hospital Visits	-.001	-.005	.001	-.002	-.0002
	(.7)	(20.8)***	(.04)	(1.6)	(.01)
Case Mix Special-ization	-.138**	.094	-.016	-.004	-.102
	(8.2)	(2.7)	(.2)	(.2)	(.7)

TABLE III-H

	Specialty				
	Family Practice	Internal Medicine	Cardiology	Pediatrics	Orthopedic Surgery
F-statistic	4.1***	4.3***	.6	5.4***	1.3
Adjusted R^2	.12	.11	.0	.17	.03
Mean Actual Encounter Time	12.2	17.1	19.6	11.7	14.7
Number of Observations	244	288	69	245	112

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[1] Dependent variable = natural log of actual encounter time/expected encounter time
* p<.05
** p<.01
*** p<.001

TABLE III-I

SPECIALTY LABOR SUPPLY FUNCTION ESTIMATES
(Dependent Variable = Natural Log of Actual Hours)

	Specialty				
Independent Variables	Family Practice	Internal Medicine	Cardiology	Pediatrics	Orthopedic Surgery
Constant	2.26	6.38	3.63	.03	3.49
	(2.7)	(60.0)***	(5.5)*	(.00)	(4.6)*
ln Price	-.141	-.156	.084	.146	-.105
	(2.4)	(7.7)**	(1.0)	(1.8)	(1.6)
ln State Price Index	-.003	.030	-.209	-.032	-.029
	(.00)	(.1)	(1.4)	(.1)	(.03)
Nurses/ Population	.00001	.00004	-.00003	.000004	.0001
	(.04)	(.3)	(.1)	(.00)	(.8)
Experience	.002	.009	.017	.004	.015
	(.1)	(6.9)**	(4.0)*	(.7)	(2.6)
Experience^2	-.00003	-.0002	-.0004	-.0001	-.0004
	(.1)	(8.1)**	(6.5)*	(.9)	(3.2)
Specialists/ Population	-.0001	.0003	-.008	.002	-.019
	(.01)	(.1)	(.5)	(.2)	(6.4)*
Size of Group	.003	-.0003	-.010	-.0004	-.006
	(1.4)	(.5)	(2.7)	(.1)	(1.1)
Size of Group^2	-.00001	.2E-6	.0001	.3E-6	.0001
	(.2)	(.4)	(2.5)	(.1)	(1.9)
Board Certified	.053	.051	.063	-.049	-.089
	(2.1)	(4.8)*	(1.2)	(2.2)	(2.3)
Case Mix Specialization	.016	.066	-.014	-.032	-.019
	(.2)	(3.6)	(.8)	(.2)	(.1)
ln Expected Encounter Time	.928	-.714	.279	1.373	.424
	(3.5)	(8.7)**	(.4)	(26.8)***	(.7)
F-statistic	1.5	2.6**	1.6	3.1***	1.8
Adjusted R^2	.02	.05	.06	.08	.06
Mean Actual Hours	52.1	54.9	55.2	48.5	54.3
Number of Observations	257	348	99	280	127

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*p<.05; ** p<.01; *** p<.001

APPENDIX IV

SUPPLEMENTARY TABLES TO CHAPTER IV

NOTE ON TABLES IV-1-A THROUGH IV-14-B

Tables IV-1-A through IV-7-J correspond to Tables IV-1 through IV-7 in Chapter IV. They present more cross-tabulations for the seven tracers. Tables IV-8-A through IV-14-B correspond to Tables IV-8 through IV-14 in Chapter IV and present more regressions (varying visit type) for the seven tracers.

TABLE IV-1-A

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED SPECIFIED SERVICES, CONTROLLING FOR PATIENT AGE, ESSENTIAL BENIGN HYPERTENSION (ICDA = 401)

	SPECIALTY		
	Family Practice	Internal Medicine	Cardiology
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Laboratory Tests			
60 and over	19.5 (786)	30.0 (1133)	30.9 (314)
Under 60	24.2 (727)	31.4 (1247)	32.9 (319)
Chest X-ray			
60 and over	2.2 (786)	13.7 (1133)	15.6 (314)
Under 60	5.0 (727)	15.3 (1247)	18.2 (319)
ECG			
60 and over	3.2 (786)	16.0 (1133)	23.6 (314)
Under 60	6.2 (727)	19.3 (1247)	25.7 (319)
Systemic Drugs			
60 and over	67.3 (786)	69.7 (1133)	51.9 (314)
Under 60	64.9 (727)	64.5 (1247)	52.7 (319)
Counseling			
60 and over	15.5 (786)	19.5 (1133)	32.2 (314)
Under 60	22.7 (727)	26.6 (1247)	28.5 (319)

TABLE IV-1-B

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH FAMILY PHYSICIANS PERFORMED CHEST X-RAYS, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS ESSENTIAL BENIGN HYPERTENSION (ICDA = 401)

	SPECIALTY		
	Family Practice	Internal Medicine	Cardiology
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement			
Solo	2.4 (588)	13.2 (616)	13.4 (262)
Group[1]	4.2 (837)	15.0 (1424)	18.5 (336)
MD Age			
Under 46	4.6 (612)	15.4 (900)	12.9 (286)
46 and over	2.2 (869)	13.9 (1049)	17.8 (269)
Board Certified			
Yes	3.7 (1096)	14.5 (1462)	14.6 (206)
No	2.8 (431)	14.6 (935)	17.6 (449)
Physician Sex			
Female	3.7 (27)	20.6 (68)	19.2 (26)
Male	3.5 (1500)	14.3 (2329)	16.5 (629)
Health Manpower Shortage Area			
Yes	1.3 (75)	7.1 (28)	0 (12)
Partially	3.1 (736)	16.3 (1390)	14.8 (434)
No	4.1 (716)	12.3 (979)	21.5 (209)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-1-C

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED LABORATORY TESTS, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, ESSENTIAL BENIGN HYPERTENSION (ICDA = 401)

	SPECIALTY		
	Family Practice	Internal Medicine	Cardiology
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement			
Solo	23.1 (588)	27.4 (616)	30.9 (262)
Group[1]	20.6 (837)	31.9 (1424)	30.1 (336)
MD Age			
Under 46	22.6 (612)	33.8 (900)	28.3 (286)
46 and over	20.9 (869)	28.8 (1049)	31.6 (269)
Board Certified			
Yes	21.4 (1096)	29.8 (1462)	32.0 (206)
No	22.7 (431)	32.1 (935)	30.5 (449)
Physician Sex			
Female	11.1 (27)	45.6 (68)	38.5 (26)
Male	21.9 (1500)	30.3 (2329)	30.7 (629)
Health Manpower Shortage Area			
Yes	26.7 (75)	32.1 (28)	66.7 (12)
Partially	21.1 (736)	33.7 (1390)	30.0 (434)
No	21.9 (716)	26.4 (979)	31.1 (209)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-1-D

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH FAMILY PHYSICIANS PERFORMED COUNSELING, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, ESSENTIAL BENIGN HYPERTENSION (ICDA = 401)

	SPECIALTY		
	Family Practice Percent N (unweighted)	Internal Medicine Percent N (unweighted)	Cardiology Percent N (unweighted)
Practice Arrangement			
Solo	21.6 (588)	20.9 (616)	35.9 (262)
Group[1]	17.7 (837)	23.5 (1424)	22.3 (336)
MD Age			
Under 46	22.4 (612)	27.9 (900)	21.7 (286)
46 and over	16.6 (869)	17.6 (1049)	38.7 (269)
Board Certified			
Yes	17.9 (1096)	20.7 (1462)	17.0 (206)
No	22.7 (431)	26.8 (935)	35.0 (449)
Physician Sex			
Female	7.4 (27)	38.2 (68)	76.9 (26)
Male	19.5 (1500)	22.6 (2329)	27.3 (629)
Health Manpower Shortage Area			
Yes	36.0 (75)	53.6 (28)	16.7 (12)
Partially	18.8 (736)	23.5 (1390)	30.4 (434)
No	18.0 (716)	21.7 (979)	27.8 (209)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-1-E

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PRESCRIBED SYSTEMIC DRUGS, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, ESSENTIAL BENIGN HYPERTENSION (ICDA = 401)

	SPECIALTY		
	Family Practice	Internal Medicine	Cardiology
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement			
Solo	65.7 (588)	71.4 (616)	55.3 (262)
Group[1]	67.5 (837)	67.9 (1424)	48.2 (336)
MD Age			
Under 46	62.8 (612)	67.4 (900)	47.6 (286)
46 and over	67.9 (869)	66.1 (1049)	60.6 (269)
Board Certified			
Yes	67.2 (1096)	64.7 (1462)	32.5 (206)
No	62.9 (431)	69.8 (935)	59.0 (449)
Physician Sex			
Female	40.7 (27)	73.5 (68)	80.8 (26)
Male	66.5 (1500)	66.5 (2329)	49.4 (629)
Health Manpower Shortage Area			
Yes	69.3 (75)	85.7 (28)	33.3 (12)
Partially	65.8 (736)	64.5 (1390)	49.3 (434)
No	65.9 (716)	69.4 (979)	54.6 (209)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-1-F

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED ECG EXAMINATIONS, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, ESSENTIAL BENIGN HYPERTENSION (ICDA = 401)

	SPECIALTY		
	Family Practice	Internal Medicine	Cardiology
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement			
Solo	4.3 (588)	16.2 (616)	26.3 (262)
Group[1]	4.5 (837)	18.7 (1424)	22.6 (336)
MD Age			
Under 46	5.1 (612)	18.0 (900)	25.5 (286)
46 and over	3.9 (869)	16.7 (1049)	19.3 (269)
Board Certified			
Yes	4.7 (1096)	17.1 (1462)	28.2 (206)
No	4.4 (431)	18.6 (935)	23.2 (449)
Physician Sex			
Female	11.1 (27)	26.5 (68)	38.5 (26)
Male	4.5 (1500)	17.4 (2329)	24.2 (629)
Health Manpower Shortage Area			
Yes	2.7 (75)	14.3 (28)	33.3 (12)
Partially	4.9 (736)	19.9 (1390)	24.7 (434)
No	4.5 (716)	14.6 (979)	24.4 (209)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-1-G

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED SPECIFIED SERVICES, CONTROLLING FOR LOCATION OF ENCOUNTER, ESSENTIAL BENIGN HYPERTENSION (ICDA = 401)

	SPECIALTY		
	Family Practice	Internal Medicine	Cardiology
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Laboratory tests			
Office	21.4 (1387)	28.9 (1971)	29.4 (487)
Hospital	27.3 (44)	51.3 (199)	36.4 (99)
OPD, Clinic, ER	23.8 (80)	29.8 (208)	40.8 (49)
Chest X-ray			
Office	3.2 (1387)	13.8 (1971)	14.0 (487)
Hospital	15.9 (44)	22.6 (199)	28.3 (99)
OPD, Clinic, ER	2.5 (80)	13.5 (208)	26.5 (49)
ECG			
Office	4.4 (1387)	17.5 (1971)	23.2 (487)
Hospital	15.9 (44)	27.1 (199)	33.3 (99)
OPD, Clinic, ER	2.5 (80)	10.1 (208)	32.7 (49)
Systemic Drugs			
Office	68.1 (1387)	70.1 (1971)	53.2 (487)
Hospital	43.2 (44)	53.3 (199)	44.4 (99)
OPD, Clinic, ER	47.5 (80)	50.5 (208)	57.1 (49)
Counseling			
Office	20.5 (1387)	23.1 (1971)	29.0 (487)
Hospital	13.6 (44)	20.6 (199)	32.3 (99)
OPD, Clinic, ER	5.0 (80)	26.0 (208)	38.8 (49)

TABLE IV-1-H

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED SPECIFIED SERVICES, CONTROLLING FOR PATIENT SOURCE, ESSENTIAL BENIGN HYPERTENSION (ICDA = 401)

	SPECIALTY		
	Family Practice	Internal Medicine	Cardiology
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Laboratory tests			
Self-referred	21.8 (1457)	28.6 (2018)	31.6 (383)
Other Professional	20.0 (40)	45.7 (333)	32.2 (255)
Chest X-ray			
Self-referred	3.5 (1457)	13.8 (2018)	15.4 (383)
Other Professional	5.0 (40)	19.2 (333)	19.6 (255)
ECG			
Self-referred	4.7 (1457)	16.9 (2018)	21.7 (383)
Other Professional	5.0 (40)	23.1 (333)	31.0 (255)
Systemic Drugs			
Self-referred	67.6 (1457)	68.9 (2018)	53.0 (383)
Other Professional	40.0 (40)	58.3 (333)	50.6 (255)
Counseling			
Self-referred	19.8 (1457)	21.6 (2018)	31.3 (383)
Other Professional	10.0 (40)	33.6 (333)	28.2 (255)

TABLE IV-1-I

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH FAMILY PHYSICIANS PERFORMED SPECIFIED SERVICES, CONTROLLING FOR FIRST VERSUS FOLLOW-UP VISITS, ESSENTIAL BENIGN HYPERTENSION (ICDA = 401)

	SPECIALTY		
	Family Practice	Internal Medicine	Cardiology
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Laboratory tests			
First	25.7 (424)	36.2 (660)	34.5 (177)
Follow-up	20.5 (1082)	28.7 (1720)	29.5 (468)
Chest X-ray			
First	5.9 (424)	21.4 (660)	24.3 (177)
Follow-up	2.6 (1082)	12.0 (1720)	14.1 (468)
ECG			
First	7.1 (424)	25.5 (660)	32.2 (177)
Follow-up	3.7 (1082)	14.8 (1720)	22.4 (468)
Systemic Drugs			
First	58.3 (424)	49.4 (660)	39.0 (177)
Follow-up	69.6 (1082)	73.4 (1720)	54.9 (468)
Counseling			
First	17.5 (424)	20.0 (660)	25.4 (177)
Follow-up	20.3 (1082)	24.4 (1720)	31.0 (468)

TABLE IV-2-A

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED SELECTED SERVICES, CONTROLLING FOR PATIENT AGE ISCHEMIC HEART DISEASE (ICDA = 412, 413)

	SPECIALTY		
	Family Practice	Internal Medicine	Cardiology
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Chest X-rays			
60 and over	8.0 (561)	19.1 (1622)	20.4 (1435)
Under 60	10.2 (137)	15.1 (622)	20.7 (1126)
Laboratory Tests			
60 and over	25.9 (561)	38.6 (1622)	31.5 (1435)
Under 60	27.0 (137)	37.8 (622)	29.2 (1126)
ECG			
60 and over	15.9 (561)	32.7 (1622)	44.0 (1435)
Under 60	22.6 (137)	40.7 (622)	44.1 (1126)
Systemic Drugs			
60 and over	60.8 (561)	66.2 (1622)	47.9 (1435)
Under 60	58.4 (137)	65.9 (622)	35.3 (1126)
Counseling			
60 and over	15.3 (561)	21.9 (1622)	26.1 (1435)
Under 60	26.3 (137)	24.0 (622)	23.7 (1126)

TABLE IV-2-B

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED CHEST X-RAYS, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, ISCHEMIC HEART DISEASE (ICDA = 412, 413)

	SPECIALTY		
	Family Practice	Internal Medicine	Cardiology
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement			
Solo	7.2 (265)	17.8 (611)	16.0 (1045)
Group[1]	8.4 (415)	17.6 (1359)	23.4 (1308)
MD Age			
Under 46	9.4 (233)	20.4 (676)	18.9 (1395)
46 and over	7.9 (445)	16.7 (1179)	21.4 (878)
Board Certified			
Yes	8.0 (527)	18.3 (1326)	19.1 (1322)
No	9.6 (178)	17.6 (930)	20.8 (1317)
Physician Sex			
Female	0 (14)	20.4 (54)	48.7 (37)
Male	8.5 (691)	17.9 (2202)	19.6 (2602)
Health Manpower Shortage Area			
Yes	9.1 (66)	10.5 (19)	8.0 (75)
Partially	11.2 (267)	18.7 (1208)	17.7 (1534)
No	6.2 (372)	17.3 (1029)	24.3 (1030)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-2-C

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED LABORATORY TESTS, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, ISCHEMIC HEART DISEASE (ICDA = 412, 413)

	SPECIALTY		
	Family Practice	Internal Medicine	Cardiology
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement			
Solo	23.8 (265)	38.8 (611)	31.2 (1045)
Group[1]	27.2 (415)	35.3 (1359)	29.4 (1308)
MD Age			
Under 46	24.5 (233)	39.9 (676)	28.4 (1395)
46 and over	26.5 (445)	36.6 (1179)	31.6 (878)
Board Certified			
Yes	24.3 (527)	36.4 (1326)	25.0 (1322)
No	30.3 (178)	41.0 (930)	34.6 (1317)
Physician Sex			
Female	14.3 (14)	31.5 (54)	48.7 (37)
Male	26.1 (691)	38.4 (2202)	29.5 (2602)
Health Manpower Shortage Area			
Yes	39.4 (66)	21.1 (19)	73.3 (75)
Partially	26.2 (267)	41.1 (1208)	27.8 (1534)
No	23.1 (372)	35.2 (1029)	29.5 (1030)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-2-D

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED ECG EXAMINATIONS, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, ISCHEMIC HEART DISEASE (ICDA = 412, 413)

	SPECIALTY		
	Family Practice	Internal Medicine	Cardiology
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement			
Solo	17.4 (265)	32.9 (611)	42.9 (1045)
Group[1]	16.4 (415)	33.0 (1359)	44.5 (1308)
MD Age			
Under 46	15.5 (233)	39.6 (676)	41.3 (1395)
46 and over	18.4 (445)	31.5 (1179)	45.6 (878)
Board Certified			
Yes	16.3 (527)	33.3 (1326)	40.6 (1322)
No	19.7 (178)	37.2 (930)	45.3 (1317)
Physician Sex			
Female	7.1 (14)	25.9 (54)	62.2 (37)
Male	17.4 (691)	35.1 (2202)	42.7 (2602)
Health Manpower Shortage Area			
Yes	18.2 (66)	15.8 (19)	64.0 (75)
Partially	20.2 (267)	37.4 (1208)	42.9 (1534)
No	14.8 (372)	32.3 (1029)	41.5 (1030)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-2E

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH FAMILY PHYSICIANS PRESCRIBED SYSTEMIC DRUGS, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, ISCHEMIC HEART DISEASE (ICDA = 412, 413)

	SPECIALTY		
	Family Practice	Internal Medicine	Cardiology
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement			
Solo	63.8 (265)	67.1 (611)	45.6 (1045)
Group[1]	57.8 (415)	65.9 (1359)	42.2 (1308)
MD Age			
Under 46	64.8 (233)	65.7 (676)	36.5 (1395)
46 and over	56.9 (445)	67.6 (1179)	52.7 (878)
Board Certified			
Yes	61.1 (527)	61.5 (1326)	32.8 (1322)
No	58.4 (178)	72.3 (930)	49.7 (1317)
Physician Sex			
Female	28.6 (14)	61.1 (54)	62.2 (37)
Male	61.1 (691)	66.1 (2202)	41.0 (2602)
Health Manpower Shortage Area			
Yes	72.7 (66)	63.2 (19)	24.0 (75)
Partially	62.2 (267)	65.5 (1208)	42.1 (1534)
No	57.0 (372)	66.6 (1029)	41.3 (1030)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-2-F

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED COUNSELING, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, ISCHEMIC HEART DISEASE (ICDA = 412, 413)

	SPECIALTY		
	Family Practice	Internal Medicine	Cardiology
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement			
Solo	20.0 (265)	24.2 (611)	23.0 (1045)
Group[1]	15.9 (415)	19.7 (1359)	29.1 (1308)
MD Age			
Under 46	20.6 (233)	25.4 (676)	25.2 (1395)
46 and over	16.4 (445)	20.4 (1179)	25.5 (878)
Board Certified			
Yes	18.2 (527)	21.6 (1326)	21.6 (1322)
No	15.7 (178)	23.7 (930)	27.3 (1317)
Physician Sex			
Female	7.1 (14)	42.6 (54)	43.2 (37)
Male	17.8 (691)	21.9 (2202)	24.1 (2602)
Health Manpower Shortage Area			
Yes	28.8 (66)	36.8 (19)	41.3 (75)
Partially	18.7 (267)	25.2 (1208)	23.3 (1534)
No	14.8 (372)	19.0 (1029)	24.9 (1030)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-2-G

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED SPECIFIC SERVICES, CONTROLLING FOR LOCATION OF ENCOUNTER ISCHEMIC HEART DISEASE (ICDA = 412, 413)

	SPECIALTY		
	Family Practice	Internal Medicine	Cardiology
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Chest X-ray			
Office	5.5 (457)	13.7 (1251)	18.1 (1171)
Hospital	17.3 (150)	26.1 (786)	22.4 (1212)
OPD, Clinic, ER	8.5 (94)	13.7 (205)	20.7 (188)
Laboratory tests			
Office	24.1 (457)	33.9 (1251)	29.0 (1171)
Hospital	31.3 (150)	46.7 (786)	31.9 (1212)
OPD, Clinic, ER	25.5 (94)	33.2 (205)	27.7 (188)
ECG			
Office	15.8 (457)	31.3 (1251)	50.0 (1171)
Hospital	26.7 (150)	44.0 (786)	38.0 (1212)
OPD, Clinic, ER	8.5 (94)	22.0 (205)	44.7 (188)
Systemic Drugs			
Office	65.9 (457)	65.2 (1251)	49.3 (1171)
Hospital	39.3 (150)	66.9 (786)	34.7 (1212)
OPD, Clinic, ER	67.0 (94)	69.3 (205)	47.3 (188)
Counseling			
Office	19.7 (457)	21.8 (1251)	25.5 (1171)
Hospital	14.0 (150)	24.1 (786)	22.9 (1212)
OPD, Clinic, ER	11.7 (94)	20.5 (205)	35.6 (188)

TABLE IV-2-H

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED SPECIFIED SERVICES, CONTROLLING FOR PATIENT SOURCE, ISCHEMIC HEART DISEASE (ICDA = 412, 413)

	SPECIALTY		
	Family Practice	Internal Medicine	Cardiology
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Laboratory test			
Self-referred	26.0 (670)	37.0 (1734)	33.5 (1039)
Other Professional	26.7 (30)	45.6 (469)	28.9 (1494)
Chest X-ray			
Self-referred	8.1 (670)	16.5 (1734)	18.2 (1039)
Other Professional	16.7 (30)	25.4 (469)	22.6 (1494)
ECG			
Self-referred	17.2 (670)	32.7 (1734)	45.0 (1039)
Other Professional	20.0 (30)	44.4 (459)	44.2 (1494)
Systemic Drugs			
Self-referred	61.8 (670)	68.7 (1734)	49.0 (1039)
Other Professional	36.7 (30)	60.8 (469)	38.6 (1494)
Counseling			
Self-referred	18.2 (670)	21.6 (1734)	26.0 (1039)
Other Professional	3.3 (30)	27.1 (469)	25.0 (1494)

TABLE IV-2-I

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED SPECIFIED SERVICES, CONTROLLING FOR FIRST VERSUS FOLLOW-UP VISITS, ISCHEMIC HEART DISEASE (ICDA = 412, 413)

	SPECIALTY		
	Family Practice	Internal Medicine	Cardiology
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Laboratory test			
First	33.3 (186)	40.9 (563)	28.6 (798)
Follow-up	23.6 (483)	37.6 (1653)	30.4 (1816)
Chest X-ray			
First	14.5 (186)	25.2 (563)	21.9 (798)
Follow-up	6.6 (483)	15.7 (1653)	19.4 (1816)
ECG			
First	24.7 (186)	40.7 (563)	41.5 (798)
Follow-up	15.1 (483)	33.4 (1653)	43.9 (1816)
Systemic Drugs			
First	60.8 (186)	55.1 (563)	31.8 (798)
Follow-up	59.2 (483)	69.6 (1653)	45.4 (1816)
Counseling			
First	22.6 (186)	18.3 (563)	19.2 (798)
Follow-up	16.6 (483)	24.0 (1653)	26.7 (1816)

TABLE IV-3-A

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED SELECTED SERVICES, CONTROLLING FOR PATIENT AGE

ASTHMA (ICDA = 493)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Chest X-rays				
60 and over	7.7 (52)	20.4 (93)	0 (1)	83.3 (6)
Under 60	11.1 (172)	28.7 (202)	13.5 (431)	26.1 (112)
Laboratory tests				
60 and over	9.6 (52)	18.3 (93)	0 (1)	33.3 (6)
Under 60	7.6 (172)	20.8 (202)	13.7 (431)	8.9 (112)
Pulmonary Functions				
60 and over	7.7 (52)	6.5 (93)	0 (1)	n.a.
Under 60	5.2 (172)	11.4 (202)	1.6 (431)	n.a.
Systemic Drugs				
60 and over	61.5 (52)	67.7 (93)	0 (1)	50.0 (6)
Under 60	64.5 (172)	74.3 (202)	65.4 (431)	25.0 (112)
Injections				
60 and over	15.4 (52)	15.1 (93)	100.0 (1)	50.0 (6)
Under 60	23.8 (172)	14.9 (202)	37.8 (431)	83.0 (112)
Referrals				
60 and over	4.0 (50)	11.0 (82)		50.0 (6)
Under 60	7.9 (165)	16.1 (186)	11.9 (413)	64.6 (110)
Counseling				
60 and over	38.5 (52)	19.4 (93)	0 (1)	16.7 (6)
Under 60	32.6 (172)	24.8 (202)	17.2 (431)	1.8 (112)

TABLE IV-3-B

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED CHEST X-RAYS, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, ASTHMA (ICDA = 493)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement				
Solo	9.6 (73)	14.7 (68)	11.3 (106)	18.3 (11)
Group[1]	9.9 (141)	27.6 (185)	12.2 (288)	26.6 (79)
MD Age				
Under 46	8.5 (130)	20.0 (125)	13.9 (281)	23.7 (75)
46 and over	8.2 (85)	26.0 (127)	11.5 (139)	30.3 (33)
Board Certified				
Yes	8.9 (169)	24.8 (157)	13.0 (338)	0 (0)
No	14.0 (57)	26.7 (146)	15.2 (99)	27.9 (122)
Physician Sex				
Female	0 (2)	33.3 (12)	16.7 (48)	0 (6)
Male	10.3 (224)	25.4 (291)	13.1 (389)	29.3 (116)
Health Manpower Shortage Area				
Yes	8.3 (12)	0 (2)	8.3 (12)	0 (1)
Partially	8.3 (97)	22.9 (175)	16.5 (236)	36.7 (60)
No	12.0 (117)	30.2 (126)	10.1 (189)	19.7 (61)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-3-C

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED LABORATORY TESTS, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, ASTHMA (ICDA = 493)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement				
Solo	8.2 (73)	13.2 (68)	16.0 (106)	0 (11)
Group[1]	8.5 (141)	22.7 (185)	11.1 (288)	10.1 (79)
MD Age				
Under 46	6.2 (130)	20.0 (125)	12.5 (281)	5.3 (76)
46 and over	8.2 (85)	15.8 (127)	15.8 (139)	15.2 (33)
Board Certified				
Yes	7.7 (169)	22.9 (157)	12.7 (338)	0 (0)
No	8.8 (57)	17.1 (146)	16.2 (99)	9.8 (122)
Physician Sex				
Female	0 (2)	25.0 (12)	10.4 (48)	0 (6)
Male	8.0 (224)	19.9 (291)	13.9 (389)	10.3 (116)
Health Manpower Shortage Area				
Yes	0 (12)	0 (2)	8.3 (12)	0 (1)
Partially	7.2 (97)	18.9 (175)	14.8 (236)	13.3 (60)
No	9.4 (117)	22.2 (126)	12.2 (189)	6.6 (61)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-3-D

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED PULMONARY FUNCTIONS, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, ASTHMA (ICDA = 493)

	SPECIALTY		
	Family Practice	Internal Medicine	Pediatrics
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement			
Solo	2.7 (73)	7.4 (68)	4.7 (106)
Group[1]	7.1 (141)	11.4 (185)	.4 (288)
MD Age			
Under 46	6.9 (130)	8.8 (125)	1.8 (281)
46 and over	4.7 (85)	9.5 (127)	2.2 (139)
Board Certified			
Yes	4.7 (169)	15.3 (157)	1.5 (338)
No	8.8 (57)	4.1 (146)	3.0 (99)
Physician Sex			
Female	0 (2)	8.3 (12)	0 (48)
Male	5.8 (224)	10.0 (291)	2.1 (389)
Health Manpower Shortage Area			
Yes	0 (12)	0 (2)	0 (12)
Partially	9.3 (97)	6.3 (175)	3.0 (236)
No	3.4 (117)	15.1 (126)	.5 (189)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-3-E

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PRESCRIBED OR ADMINISTERED SYSTEMIC DRUGS, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, ASTHMA (ICDA = (493)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement				
Solo	54.8 (73)	77.9 (68)	50.0 (106)	27.3 (11)
Group[1]	66.7 (141)	67.0 (185)	70.8 (288)	22.8 (79)
MD Age				
Under 46	63.1 (130)	74.4 (125)	70.1 (281)	19.7 (76)
46 and over	61.2 (85)	67.7 (127)	55.4 (139)	33.3 (33)
Board Certified				
Yes	68.6 (169)	70.1 (157)	65.4 (338)	0 (0)
No	47.4 (57)	72.6 (146)	65.7 (99)	25.4 (122)
Physician Sex				
Female	100.0 (2)	75.0 (12)	62.5 (48)	16.7 (6)
Male	63.0 (224)	71.1 (291)	65.8 (389)	25.9 (116)
Health Manpower Shortage Area				
Yes	50.0 (12)	100.0 (2)	50.0 (12)	100.0 (1)
Partially	58.8 (97)	68.0 (175)	63.1 (236)	21.7 (60)
No	68.4 (117)	75.4 (126)	69.3 (189)	27.9 (61)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-3-F

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS GAVE INJECTIONS, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, ASTHMA (ICDA = 493)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement				
Solo	26.0 (73)	14.7 (68)	44.3 (106)	54.6 (11)
Group[1]	20.6 (141)	14.1 (185)	36.8 (288)	83.5 (79)
MD Age				
Under 46	21.5 (130)	9.6 (125)	27.4 (281)	85.5 (76)
46 and over	23.5 (85)	17.3 (127)	55.4 (139)	63.6 (33)
Board Certified				
Yes	21.3 (169)	14.7 (157)	36.7 (338)	0 (0)
No	22.8 (57)	15.8 (146)	41.4 (99)	78.7 (122)
Physician Sex				
Female	0 (2)	16.7 (12)	52.1 (48)	83.3 (6)
Male	21.9 (224)	15.1 (291)	36.0 (389)	78.5 (116)
Health Manpower Shortage Area				
Yes	16.7 (12)	50.0 (2)	16.7 (12)	100.0 (1)
Partially	24.7 (97)	13.1 (175)	41.5 (236)	81.7 (60)
No	19.7 (117)	17.5 (126)	34.4 (189)	75.4 (61)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-3-G

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS MADE REFERRALS, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, ASTHMA (ICDA = 493)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement				
Solo	5.9 (68)	9.7 (62)	13.0 (100)	45.5 (11)
Group[1]	6.6 (136)	16.5 (164)	9.1 (276)	70.1 (77)
MD Age				
Under 46	8.7 (126)	16.2 (117)	11.8 (271)	66.2 (74)
46 and over	5.1 (79)	10.2 (108)	13.1 (130)	51.7 (29)
Board Certified				
Yes	7.4 (163)	16.0 (144)	9.7 (320)	0 (0)
No	5.8 (52)	12.4 (129)	19.4 (98)	63.8 (116)
Physician Sex				
Female	0 (1)	30.0 (10)	4.3 (47)	33.3 (6)
Male	7.0 (214)	13.7 (263)	12.9 (371)	65.5 (110)
Health Manpower Shortage Area				
Yes	0 (12)	0 (12)	0 (12)	0 (1)
Partially	4.4 (92)	15.2 (158)	14.2 (225)	64.9 (57)
No	9.9 (111)	13.3 (113)	9.9 (181)	63.8 (58)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-3-H

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED COUNSELING, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, ASTHMA (ICDA = 493)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement				
Solo	34.3 (73)	16.2 (68)	17.0 (106)	0 (11)
Group[1]	33.3 (141)	22.2 (185)	17.4 (288)	3.8 (79)
MD Age				
Under 46	34.6 (130)	27.2 (125)	17.8 (281)	1.3 (76)
46 and over	32.9 (85)	11.8 (127)	12.2 (139)	0 (33)
Board Certified				
Yes	36.7 (169)	26.1 (157)	16.9 (338)	0 (0)
No	24.6 (57)	18.5 (146)	17.2 (99)	2.5 (122)
Physician Sex				
Female	50.0 (2)	8.3 (12)	18.8 (48)	0 (6)
Male	33.5 (224)	23.0 (291)	16.7 (389)	2.6 (116)
Health Manpower Shortage Area				
Yes	16.7 (12)	0 (2)	8.3 (12)	0 (1)
Partially	27.8 (97)	17.1 (175)	14.0 (236)	3.3 (60)
No	40.2 (117)	30.2 (126)	21.2 (189)	1.6 (61)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-3-I

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED SPECIFIED SERVICES, CONTROLLING FOR PATIENT SOURCE, ASTHMA (ICDA = 493)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Chest X-ray				
Self-referred	11.2 (205)	24.7 (215)	11.0 (401)	30.4 (102)
Other Professional	0 (15)	29.8 (84)	50.0 (26)	20.0 (15)
Laboratory tests				
Self-referred	8.8 (205)	20.5 (215)	12.0 (401)	10.8 (102)
Other Professional	0 (15)	20.2 (84)	34.6 (26)	6.7 (15)
Systemic Drugs				
Self-referred	66.3 (205)	71.6 (215)	65.1 (401)	30.4 (102)
Other Professional	46.7 (15)	71.4 (84)	76.9 (26)	0 (15)
Injections				
Self-referred	23.4 (205)	16.7 (215)	38.9 (401)	81.4 (102)
Other Professional	6.7 (15)	11.9 (84)	30.8 (26)	86.7 (15)
Pulmonary Functions				
Self-referred	5.9 (205)	6.1 (215)	1.0 (401)	n.a.
Other Professional	6.7 (15)	20.2 (84)	11.5 (26)	n.a.
Counseling				
Self-referred	34.6 (205)	23.3 (215)	16.5 (401)	2.9 (102)
Other Professional	33.3 (15)	21.4 (84)	23.1 (26)	0 (15)
Referrals				
Self-referred	6.0 (201)	9.9 (192)	10.9 (386)	62.4 (101)
Other Professional	21.4 (14)	25.3 (79)	30.8 (26)	73.3 (15)

TABLE IV-3-J

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED SPECIFIED SERVICES, CONTROLLING FOR LOCATION OF ENCOUNTERS, ASTHMA (ICDA = 493)

	SPECIALTY			
	Family Practice Percent N (unweighted)	Internal Medicine Percent N (unweighted)	Pediatrics Percent N (unweighted)	Emergency Medicine[1] Percent N (unweighted)
Chest X-ray				
Office	9.1 (154)	23.8 (164)	6.1 (310)	30.4 (112)
Hospital	5.7 (53)	30.0 (100)	41.6 (77)	0 (6)
OPD, Clinic, ER	33.3 (15)	23.7 (38)	17.8 (45)	0 (1)
Laboratory tests				
Office	7.1 (154)	20.1 (164)	7.1 (310)	10.7 (112)
Hospital	9.4 (53)	17.0 (100)	36.4 (77)	0 (6)
OPD, Clinic, ER	13.3 (15)	29.0 (38)	20.0 (45)	0 (1)
Systemic Drugs				
Office	64.9 (154)	73.8 (164)	66.5 (310)	27.7 (112)
Hospital	54.7 (53)	63.0 (100)	62.3 (77)	0 (6)
OPD, Clinic, ER	80.0 (15)	84.2 (38)	68.9 (45)	0 (1)
Injections				
Office	24.0 (154)	16.5 (164)	45.5 (310)	79.5 (112)
Hospital	11.3 (53)	12.0 (100)	11.7 (77)	100.0 (6)
OPD, Clinic, ER	40.0 (15)	18.4 (38)	33.3 (45)	100.0 (1)
Pulmonary Functions				
Office	5.8 (154)	8.5 (164)	0 (310)	n.a.
Hospital	5.7 (53)	13.0 (100)	7.8 (77)	n.a.
OPD, Clinic, ER	6.7 (15)	7.9 (38)	4.4 (45)	n.a.
Counseling				
Office	29.2 (154)	23.8 (164)	16.8 (310)	2.7 (112)
Hospital	45.3 (53)	22.0 (100)	18.2 (77)	0 (6)
OPD, Clinic, ER	40.0 (15)	18.4 (38)	17.8 (45)	0 (1)
Referrals				
Office	3.4 (148)	7.4 (149)	9.2 (293)	67.9 (109)
Hospital	12.0 (50)	23.6 (89)	16.0 (75)	0 (6)
OPD, Clinic, ER	26.7 (15)	20.6 (34)	24.4 (45)	0 (1)

[1] For emergency medicine physicians, encounters in the emergency room are classified as office visits, and encounters in the office are classified with OPD, clinic and ER visits.

TABLE IV-3-K

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED SPECIFIED SERVICES, CONTROLLING FOR FIRST VERSUS FOLLOW-UP VISITS, ASTHMA (ICDA = 493)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine[1]
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Chest X-ray				
First	11.0 (100)	29.4 (85)	13.8 (224)	30.1 (83)
Follow-up	9.6 (125)	24.3 (218)	13.3 (211)	23.7 (38)
Laboratory tests				
First	7.0 (100)	24.7 (85)	15.6 (224)	9.6 (83)
Follow-up	8.8 (125)	18.4 (218)	11.4 (211)	10.5 (38)
Systemic Drugs				
First	67.0 (100)	72.9 (85)	72.8 (224)	25.3 (83)
Follow-up	60.8 (125)	70.6 (218)	58.3 (211)	26.3 (38)
Injections				
First	20.0 (100)	16.5 (85)	41.1 (224)	72.3 (83)
Follow-up	22.4 (125)	14.7 (218)	33.7 (211)	92.1 (38)
Pulmonary Functions				
First	7.0 (100)	7.1 (85)	2.7 (224)	n.a.
Follow-up	4.8 (125)	11.0 (218)	1.0 (211)	n.a.
Counseling				
First	29.0 (100)	17.7 (85)	17.0 (224)	2.4 (83)
Follow-up	37.6 (125)	24.3 (218)	17.1 (211)	2.6 (38)
Referrals				
First	8.9 (90)	22.5 (71)	15.2 (211)	71.4 (77)
Follow-up	5.7 (124)	11.4 (202)	8.8 (205)	50.0 (38)

[1] For emergency medicine physicians, encounters in the emergency room are classified as office visits, and encounters in the office are classified with OPD, clinic and ER visits.

TABLE IV-4-A

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED SPECIFIED SERVICES, CONTROLLING FOR PATIENT AGE
URI AND NASOPHARYNGITIS (ICDA = 460, 465)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Chest X-ray				
60 and over	6.0 (151)	15.6 (109)	0 (0)	45.5 (11)
Under 60	2.4 (1599)	7.6 (541)	1.7 (1236)	21.7 (194)
Laboratory tests				
60 and over	17.2 (151)	18.4 (109)	0 (0)	45.5 (11)
Under 60	11.3 (1599)	12.8 (541)	9.7 (1236)	12.4 (194)
Culture				
60 and over	5.3 (151)	3.7 (109)	0 (0)	9.1 (11)
Under 60	10.2 (1599)	12.4 (541)	20.4 (1236)	13.4 (194)
Systemic Drugs				
60 and over	72.2 (151)	76.2 (109)	0 (0)	63.6 (11)
Under 60	76.2 (1598)	77.3 (541)	61.6 (1236)	49.5 (194)
Injections				
60 and over	19.9 (151)	6.4 (109)	0 (0)	9.1 (11)
Under 60	12.3 (1599)	5.9 (541)	3.9 (1236)	7.2 (194)
Referrals				
60 and over	3.4 (146)	4.7 (106)	0 (0)	63.6 (11)
Under 60	2.0 (1539)	2.6 (507)	1.7 (1178)	38.9 (193)

TABLE IV-4-B

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED CHEST X-RAYS, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, URI AND NASOPHARYNGITIS (ICDA = 460, 465)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement				
Solo	2.2 (586)	6.8 (192)	.8 (369)	33.3 (27)
Group[1]	3.0 (1069)	9.8 (348)	2.3 (795)	23.3 (86)
MD Age				
Under 46	3.1 (867)	5.7 (296)	2.2 (669)	24.6 (122)
46 and over	2.3 (813)	12.2 (247)	1.1 (544)	20.0 (80)
Board Certified				
Yes	2.5 (1303)	9.2 (260)	1.8 (961)	0 (0)
No	3.3 (453)	8.7 (391)	1.4 (289)	22.4 (210)
Physician Sex				
Female	3.9 (26)	3.9 (26)	2.0 (153)	50.0 (4)
Male	2.7 (1730)	9.1 (625)	1.6 (1097)	21.8 (206)
Health Manpower Shortage Area				
Yes	1.5 (132)	0 (5)	0 (24)	0 (0)
Partially	3.5 (609)	11.0 (301)	2.1 (684)	25.9 (112)
No	2.5 (1015)	7.3 (345)	1.3 (542)	18.4 (98)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-4-C

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED LABORATORY TESTS, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, URI AND NASOPHARYNGITIS (ICDA = 460, 465)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement				
Solo	9.9 (586)	12.0 (192)	8.1 (369)	48.2 (27)
Group[1]	12.4 (1069)	15.2 (348)	10.4 (795)	11.6 (86)
MD Age				
Under 46	9.7 (867)	11.5 (296)	8.8 (669)	13.1 (122)
46 and over	12.1 (813)	15.0 (247)	11.2 (544)	15.0 (80)
Board Certified				
Yes	12.7 (1303)	12.3 (260)	9.3 (961)	0 (0)
No	9.1 (453)	14.6 (391)	11.1 (289)	13.8 (210)
Physician Sex				
Female	3.9 (26)	11.5 (26)	15.7 (153)	25.0 (4)
Male	11.9 (1730)	13.8 (625)	8.8 (1097)	13.6 (206)
Health Manpower Shortage Area				
Yes	14.4 (132)	60.0 (5)	8.3 (24)	0 (0)
Partially	11.8 (609)	16.0 (301)	8.5 (684)	16.1 (112)
No	11.3 (1015)	11.0 (345)	11.3 (542)	11.2 (98)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-4-D

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED CULTURES, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, URI AND NASOPHARYNGITIS (ICDA = 460, 465)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement				
Solo	11.1 (586)	5.7 (192)	24.1 (369)	11.1 (27)
Group[1]	8.8 (1069)	12.1 (348)	18.2 (795)	12.8 (86)
MD Age				
Under 46	9.2 (867)	12.5 (296)	18.5 (669)	14.8 (122)
46 and over	9.7 (813)	6.1 (247)	22.8 (544)	10.0 (80)
Board Certified				
Yes	9.4 (1303)	16.2 (260)	21.6 (961)	0 (0)
No	10.6 (453)	7.4 (391)	15.6 (289)	12.9 (210)
Physician Sex				
Female	15.4 (26)	11.5 (26)	19.6 (153)	0 (4)
Male	9.7 (1730)	10.9 (625)	20.3 (1097)	13.1 (206)
Health Manpower Shortage Area				
Yes	4.6 (132)	0 (5)	16.7 (24)	0 (0)
Partially	12.6 (609)	13.0 (301)	22.5 (684)	16.1 (112)
No	8.7 (1015)	9.3 (345)	17.5 (542)	9.2 (98)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-4-E

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PRESCRIBED SYSTEMIC DRUGS, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, URI AND NASOPHARYNGITIS (ICDA = 460, 465)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement				
Solo	72.5 (586)	77.6 (192)	63.1 (369)	51.9 (27)
Group[1]	78.2 (1068)	77.6 (348)	60.9 (795)	55.8 (86)
MD Age				
Under 46	76.9 (867)	78.4 (296)	60.8 (669)	56.6 (122)
46 and over	74.0 (812)	74.9 (247)	62.0 (544)	37.5 (80)
Board Certified				
Yes	79.0 (1302)	78.9 (260)	62.5 (961)	0 (0)
No	66.5 (453)	75.7 (391)	58.5 (289)	49.1 (210)
Physician Sex				
Female	73.1 (26)	65.4 (26)	64.1 (153)	50.0 (4)
Male	75.8 (1729)	77.4 (625)	61.3 (1097)	49.0 (206)
Health Manpower Shortage Area				
Yes	90.9 (132)	100.0 (5)	95.8 (24)	0 (0)
Partially	71.9 (609)	74.8 (301)	56.7 (684)	34.8 (112)
No	76.1 (1014)	78.6 (345)	66.2 (542)	65.3 (98)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-4-F

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS GAVE INJECTIONS, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, URI AND NASOPHARYNGITIS (ICDA = 460, 465)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement				
Solo	18.3 (586)	8.3 (192)	4.6 (369)	11.1 (27)
Group[1]	10.7 (1069)	4.0 (348)	3.9 (795)	7.0 (86)
MD Age				
Under 46	10.3 (867)	2.4 (296)	3.0 (669)	6.6 (122)
46 and over	14.2 (813)	10.5 (247)	5.2 (544)	8.8 (80)
Board Certified				
Yes	10.9 (1303)	3.9 (260)	3.3 (961)	0 (0)
No	18.8 (453)	7.4 (391)	5.5 (289)	7.1 (210)
Physician Sex				
Female	3.9 (26)	23.1 (26)	3.9 (153)	25.0 (4)
Male	13.1 (1730)	5.3 (625)	3.8 (1097)	6.8 (206)
Health Manpower Shortage Area				
Yes	6.1 (132)	0 (5)	4.2 (24)	0 (0)
Partially	13.1 (609)	4.3 (301)	3.4 (684)	9.8 (112)
No	13.7 (1015)	7.5 (345)	4.4 (542)	4.1 (98)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-4-G

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS MADE REFERRALS, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, URI AND NASOPHARYNGITIS (ICDA = 460, 465)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement				
Solo	1.1 (545)	4.4 (181)	1.7 (356)	33.3 (27)
Group[1]	2.4 (1044)	1.8 (329)	1.3 (751)	58.8 (85)
MD Age				
Under 46	2.6 (848)	2.5 (286)	1.6 (626)	56.2 (121)
46 and over	1.6 (766)	3.5 (228)	1.9 (528)	16.0 (75)
Board Certified				
Yes	2.2 (1246)	2.9 (245)	1.4 (911)	0 (0)
No	1.8 (442)	3.0 (368)	2.9 (280)	40.2 (204)
Physician Sex				
Female	13.0 (23)	4.4 (23)	2.7 (151)	25.0 (4)
Male	1.9 (1665)	2.9 (590)	1.6 (1040)	40.5 (200)
Health Manpower Shortage Area				
Yes	1.5 (130)	0 (5)	0 (24)	0 (0)
Partially	2.7 (558)	3.7 (274)	1.7 (642)	34.9 (109)
No	1.8 (1000)	2.4 (334)	1.9 (525)	46.3 (95)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-4-H

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED SPECIFIED SERVICES, CONTROLLING FOR PATIENT SOURCE, URI AND NASOPHARYNGITIS (ICDA = 460, 465)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Chest X-ray				
Self-referred	2.8 (1701)	8.1 (617)	1.5 (1203)	23.0 (200)
Other Professional	3.5 (29)	28.6 (21)	13.0 (23)	25.0 (4)
Laboratory tests				
Self-referred	12.1 (1701)	13.5 (617)	9.7 (1203)	13.5 (200)
Other Professional	3.5 (29)	23.8 (21)	13.0 (23)	50.0 (4)
Culture				
Self-referred	9.5 (1701)	11.4 (617)	20.5 (1203)	13.5 (200)
Other Professional	13.8 (29)	4.8 (21)	30.4 (23)	0 (4)
Systemic Drugs				
Self-referred	76.5 (1700)	78.4 (617)	61.7 (1203)	51.0 (200)
Other Professional	75.9 (29)	52.4 (21)	60.9 (23)	25.0 (4)
Injections				
Self-referred	13.3 (1701)	6.3 (617)	3.9 (1203)	6.5 (200)
Other Professional	3.5 (29)	0 (21)	4.4 (23)	50.0 (4)
Referrals				
Self-referred	1.9 (1657)	2.5 (590)	1.6 (1158)	39.5 (200)
Other Professional	13.8 (29)	11.1 (18)	8.7 (23)	75.0 (4)

TABLE IV-4-I

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED SPECIFIC SERVICES, CONTROLLING FOR LOCATION OF ENCOUNTER, URI AND NASOPHARYNGITIS (ICDA = 460, 465)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine[1]
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Chest X-ray				
Offce	2.2 (1604)	7.9 (531)	1.4 (1098)	23.1 (199)
Hospital	27.6 (29)	53.9 (13)	38.5 (13)	0 (4)
OPD, Clinic, ER	3.9 (102)	8.7 (103)	.8 (119)	33.3 (3)
Laboratory tests				
Office	11.9 (1604)	13.0 (531)	8.3 (1098)	14.6 (199)
Hospital	24.1 (29)	53.9 (13)	46.2 (13)	0 (4)
OPD, Clinic, ER	6.9 (102)	12.6 (103)	17.7 (119)	0 (3)
Culture				
Office	9.8 (1604)	8.5 (531)	20.1 (1098)	13.6 (199)
Hospital	13.8 (29)	15.4 (13)	38.5 (13)	0 (4)
OPD, Clinic, ER	8.8 (102)	21.4 (103)	18.5 (119)	0 (3)
Systemic Drugs				
Office	77.2 (1603)	78.9 (531)	62.3 (1098)	48.7 (199)
Hospital	31.0 (29)	61.5 (13)	46.2 (13)	75.0 (4)
OPD, Clinic, ER	73.5 (102)	69.9 (103)	58.0 (119)	100.0 (3)
Injections				
Office	13.7 (1604)	6.4 (531)	4.1 (1098)	7.5 (199)
Hospital	10.3 (29)	0 (13)	15.4 (13)	0 (4)
OPD, Clinic, ER	4.9 (102)	2.9 (103)	.8 (119)	0 (3)
Referral				
Office	1.4 (1553)	1.2 (504)	1.3 (1045)	41.1 (197)
Hospital	24.0 (25)	40.0 (10)	0 (12)	25.0 (4)
OPD, Clinic, ER	6.9 (101)	8.3 (97)	6.1 (115)	0 (3)

[1] For emergency medicine physicians, encounters in the emergency room are classified as office visits, and encounters in the office are classified with OPD, clinic and ER visits.

TABLE IV-4-J

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED SPECIFIED SERVICES, CONTROLLING FOR FIRST VERSUS FOLLOW-UP VISITS, URI AND NASOPHARYNGITIS (ICDA = 460, 465)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Chest X-ray				
First	2.0 (1541)	8.2 (561)	1.5 (1085)	21.6 (204)
Follow-up	8.4 (214)	13.3 (90)	3.1 (163)	50.0 (6)
Laboratory tests				
First	10.8 (1541)	12.1 (561)	9.4 (1085)	13.7 (204)
Follow-up	18.7 (214)	23.3 (90)	11.7 (163)	16.7 (6)
Culture				
First	10.5 (1541)	11.6 (561)	21.6 (1085)	12.8 (204)
Follow-up	4.7 (214)	6.7 (90)	11.7 (163)	16.7 (6)
Systemic Drugs				
First	78.3 (1541)	78.8 (561)	61.8 (1085)	49.0 (204)
Follow-up	57.3 (213)	65.6 (90)	60.7 (163)	50.0 (6)
Injections				
First	11.4 (1541)	5.4 (561)	3.0 (1085)	7.4 (204)
Follow-up	24.3 (214)	10.0 (90)	8.0 (163)	0 (6)
Referral				
First	1.6 (1479)	2.7 (529)	1.8 (1032)	39.9 (198)
Follow-up	5.3 (208)	4.8 (84)	1.3 (157)	50.0 (6)

TABLE IV-5-A

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED SELECTED SERVICES, CONTROLLING FOR PATIENT AGE, PHARYNGITIS AND TONSILLITIS (ICDA = 462, 463)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Chest X-rays				
60 and over	0 (27)	21.7 (23)	0 (1)	50.0 (2)
Under 60	.9 (1021)	3.1 (255)	.6 (2339)	6.9 (276)
Laboratory tests				
60 and over	18.5 (27)	34.8 (23)	0 (1)	50.0 (2)
Under 60	13.8 (1021)	22.0 (255)	10.0 (2339)	15.2 (276)
Cultures				
60 and over	14.8 (27)	26.1 (23)	0 (1)	100.0 (2)
Under 60	32.4 (1021)	52.2 (255)	61.1 (2339)	43.5 (276)
Systemic Drugs				
60 and over	81.5 (27)	69.6 (27)	100.0 (1)	100.0 (2)
Under 60	75.3 (1021)	75.3 (255)	66.1 (2339)	65.9 (276)
Injections				
60 and over	18.5 (27)	4.4 (23)	0 (1)	0 (2)
Under 60	16.8 (1021)	9.4 (255)	14.9 (2339)	28.6 (276)
Referrals				
60 and over	3.7 (27)	0 (21)	0 (1)	100.0 (2)
Under 60	1.6 (991)	4.4 (249)	2.9 (2245)	48.9 (272)

TABLE IV-5-B

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED CHEST X-RAYS, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, PHARYNGITIS AND TONSILLITIS (ICDA = 462, 463)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement				
Solo	2.2 (369)	6.4 (78)	.3 (764)	12.1 (58)
Group[1]	.2 (637)	4.5 (155)	.8 (1529)	7.6 (132)
MD Age				
Under 46	.6 (488)	3.0 (135)	.5 (1018)	7.1 (170)
46 and over	.8 (530)	6.7 (105)	.7 (1248)	7.1 (98)
Board Certified				
Yes	.8 (802)	7.7 (143)	.5 (1962)	0 (0)
No	1.2 (251)	1.5 (137)	1.3 (397)	7.1 (281)
Physician Sex				
Female	0 (5)	0 (10)	.5 (207)	12.5 (16)
Male	.9 (1048)	4.8 (270)	.6 (2152)	6.8 (265)
Health Manpower Shortage Area				
Yes	0 (66)	0 (15)	0 (53)	33.3 (6)
Partially	.6 (499)	7.3 (138)	.9 (1177)	9.2 (141)
No	1.2 (488)	2.4 (127)	.3 (1129)	3.7 (134)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-5-C

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED LABORATORY TESTS, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, PHARYNGITIS AND TONSILLITIS, (ICDA = 462, 463)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement				
Solo	12.7 (369)	24.4 (78)	8.1 (764)	17.2 (58)
Group[1]	13.8 (637)	20.0 (155)	10.9 (1529)	18.2 (132)
MD Age				
Under 46	12.5 (488)	12.6 (135)	8.6 (1018)	14.7 (170)
46 and over	14.7 (530)	28.6 (105)	11.5 (1248)	17.4 (98)
Board Certified				
Yes	14.1 (802)	24.5 (143)	10.0 (1962)	0 (0)
No	13.2 (251)	21.2 (137)	9.6 (397)	15.3 (281)
Physician Sex				
Female	40.0 (5)	60.0 (10)	8.7 (207)	18.8 (16)
Male	13.7 (1048)	21.5 (270)	10.1 (2152)	15.1 (265)
Health Manpower Shortage Area				
Yes	15.2 (66)	13.3 (15)	13.2 (53)	66.7 (6)
Partially	12.0 (499)	28.3 (138)	9.5 (1177)	16.3 (141)
No	15.6 (488)	18.1 (127)	10.3 (1129)	11.9 (134)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-5-D

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED CULTURES, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, PHARYNGITIS AND TONSILLITIS (ICDA = 462, 463)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement				
Solo	23.0 (369)	35.9 (78)	60.6 (764)	34.5 (58)
Group[1]	36.1 (637)	54.2 (155)	61.0 (1529)	40.9 (132)
MD Age				
Under 46	38.3 (488)	56.3 (135)	71.8 (1018)	47.1 (170)
46 and over	26.8 (530)	36.2 (105)	52.5 (1248)	37.8 (98)
Board Certified				
Yes	30.9 (802)	53.2 (143)	62.7 (1962)	0 (0)
No	35.9 (251)	46.7 (137)	51.9 (397)	43.4 (281)
Physician Sex				
Female	60.0 (5)	60.0 (10)	53.1 (207)	18.8 (16)
Male	32.0 (1048)	49.6 (270)	61.7 (2152)	44.9 (265)
Health Manpower Shortage Area				
Yes	16.7 (66)	6.7 (15)	45.3 (53)	0 (6)
Partially	34.5 (499)	50.0 (138)	65.3 (1177)	42.6 (141)
No	31.8 (488)	55.1 (127)	57.1 (1129)	46.3 (134)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-5-E

PERCENTAGE OF PAITNET ENCOUNTERS IN WHICH PHYSICIANS PRESCRIBED SYSTEMIC DRUGS, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, PHARYNGITIS AND TONSILLITIS (ICDA = 462, 463)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement				
Solo	76.7 (369)	65.4 (78)	70.0 (764)	74.1 (58)
Group[1]	75.5 (637)	79.4 (155)	64.3 (1529)	61.4 (132)
MD Age				
Under 46	76.8 (488)	74.8 (135)	59.2 (1018)	70.0 (170)
46 and over	74.2 (530)	69.5 (105)	71.6 (1248)	62.2 (98)
Board Certified				
Yes	78.1 (802)	72.0 (143)	65.8 (1962)	0 (0)
No	66.5 (251)	77.4 (137)	66.0 (397)	65.8 (281)
Physician Sex				
Female	80.0 (5)	70.0 (10)	67.6 (207)	87.5 (16)
Male	75.3 (1048)	74.8 (270)	65.6 (2152)	64.5 (265)
Health Manpower Shortage Area				
Yes	89.4 (66)	73.3 (15)	75.5 (53)	100.0 (6)
Partially	70.1 (499)	70.3 (138)	61.7 (1177)	58.2 (141)
No	78.7 (488)	79.5 (127)	69.6 (1129)	72.4 (134)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-5-F

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS GAVE INJECTIONS, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, PHARYNGITIS AND TONSILLITIS, (ICDA = 462, 463)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement				
Solo	18.4 (369)	19.2 (78)	17.5 (764)	22.4 (58)
Group[1]	17.0 (637)	5.8 (155)	14.1 (1529)	34.9 (132)
MD Age				
Under 46	13.9 (488)	7.4 (135)	11.4 (1018)	22.9 (170)
46 and over	20.2 (530)	9.5 (105)	18.1 (1248)	38.8 (98)
Board Certified				
Yes	17.2 (802)	5.6 (143)	14.2 (1962)	0 (0)
No	15.9 (251)	12.4 (137)	18.4 (397)	28.1 (281)
Physician Sex				
Female	0 (5)	20.0 (10)	12.6 (207)	0 (16)
Male	17.0 (1048)	8.5 (270)	15.1 (2152)	29.8 (265)
Health Manpower Shortage Area				
Yes	9.1 (66)	0 (15)	13.2 (53)	66.7 (6)
Partially	18.6 (499)	8.7 (138)	10.3 (1177)	23.4 (141)
No	16.2 (488)	10.2 (127)	19.8 (1129)	31.3 (134)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-5-G

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS MADE REFERRALS, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, PHARYNGITIS AND TONSILLITIS (ICDA = 462, 463)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement				
Solo	1.7 (355)	1.4 (74)	3.6 (732)	29.3 (58)
Group[1]	1.1 (623)	4.0 (151)	2.4 (1461)	60.0 (130)
MD Age				
Under 46	1.7 (481	2.2 (135)	3.2 (949)	58.9 (168)
46 and over	1.6 (507)	8.3 (97)	2.7 (1217)	29.8 (94)
Board Certified				
Yes	1.7 (786)	3.7 (137)	2.9 (1877)	0 (0)
No	1.7 (236)	4.5 (134)	2.9 (381)	49.1 (275)
Physician Sex				
Female	0 (5)	0 (6)	1.0 (200)	31.3 (16)
Male	1.7 (1017)	4.2 (265)	3.1 (2058)	50.2 (259)
Health Manpower Shortage Area				
Yes	1.5 (65)	0 (14)	3.8 (53)	33.3 (6)
Partally	1.3 (473)	5.3 (133)	3.5 (1132)	51.1 (137)
No	2.1 (484)	3.2 (124)	2.3 (1073)	47.7 (132)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-5-H

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED
SPECIFIED SERVICES, CONTROLLING FOR PATIENT SOURCE,
PHARYNGITIS AND TONSILLITIS (ICDA = 462, 463)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Chest X-ray				
Self-referred	.8 (1002)	2.8 (255)	.6 (2272)	7.3 (260)
Other Professional	3.1 (32)	28.6 (21)	2.3 (43)	6.3 (16)
Laboratory tests				
Self-referred	14.2 (1002)	20.4 (255)	9.9 (2272)	15.4 (260)
Other Professional	9.4 (32)	52.4 (21)	14.0 (43)	18.8 (16)
Cultures				
Self-referred	31.6 (1002)	49.4 (255)	60.9 (2272)	44.6 (260)
Other Professional	53.1 (32)	61.9 (21)	55.8 (43)	31.3 (16)
Systemic Drugs				
Self-referred	77.0 (1002)	73.7 (255)	65.9 (2272)	68.1 (260)
Other Professional	59.4 (32)	90.5 (21)	67.4 (43)	43.8 (16)
Injections				
Self-referred	17.4 (1002)	9.4 (255)	15.1 (2272)	28.1 (260)
Other Professional	12.5 (32)	0 (21)	18.6 (43)	37.5 (16)
Referral				
Self-referred	1.2 (988)	3.2 (249)	2.3 (2208)	47.5 (257)
Other Professional	16.1 (31)	15.0 (20)	38.1 (42)	81.3 (16)

TABLE IV-5-I

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED SPECIFIED SERVICES, CONTROLLING FOR LOCATION OF ENCOUNTER, PHARYNGITIS AND TONSILLITIS (ICDA = 462, 463)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine[1]
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Chest X-ray				
Office	.7 (942)	2.4 (210)	.5 (2209)	7.4 (257)
Hospital	11.1 (18)	42.9 (14)	5.0 (20)	0 (6)
OPD, Clinic, ER	0 (74)	3.9 (51)	1.9 (105)	0 (15)
Laboratory tests				
Office	13.5 (942)	17.6 (210)	9.4 (2209)	16.0 (257)
Hospital	33.3 (18)	64.3 (14)	55.0 (20)	0 (6)
OPD, Clinic, ER	14.9 (74)	35.3 (51)	13.3 (105)	6.7 (15)
Cultures				
Office	33.3 (942)	46.7 (210)	61.0 (2209)	45.5 (257)
Hospital	5.6 (18)	35.7 (14)	45.0 (20)	33.3 (6)
OPD, Clinic, ER	25.7 (74)	70.6 (51)	62.9 (105)	20.0 (15)
Systemic Drugs				
Office	77.5 (942)	74.3 (210)	66.3 (2209)	65.8 (257)
Hospital	27.8 (18)	78.6 (14)	75.0 (20)	16.7 (6)
OPD, Clinic, ER	68.9 (74)	74.5 (51)	62.9 (105)	93.3 (15)
Injections				
Office	17.5 (942)	10.0 (210)	15.3 (2209)	29.2 (257)
Hospital	5.6 (18)	0 (14)	15.0 (20)	50.0 (6)
OPD, Clinic, ER	14.9 (74)	7.8 (51)	9.5 (105)	6.7 (15)
Referral				
Office	1.1 (920)	1.0 (207)	2.5 (2120)	52.2 (253)
Hospital	11.1 (18)	30.8 (13)	15.0 (20)	16.7 (6)
OPD, Clinic, ER	6.8 (74)	10.6 (47)	8.7 (103)	13.3 (15)

[1] For emergency medicine physicians, encounters in the emergency room are classified as office visits, and encounters in the office are classified with OPD, clinic and ER visits.

TABLE IV-5-J

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED SPECIFIED SERVICES, CONTROLLING FOR FIRST VERSUS FOLLOW-UP VISITS, PHARYNGITIS AND TONSILLITIS (ICDA = 462, 463)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Chest X-ray				
First	.8 (910)	2.5 (244)	.5 (2104)	7.5 (268)
Follow-up	1.4 (143)	19.4 (36)	1.6 (255)	0 (13)
Laboratory tests				
First	12.8 (910)	20.5 (244)	9.2 (2104)	14.9 (268)
Follow-up	21.0 (143)	38.9 (36)	16.5 (255)	23.1 (13)
Cultures				
First	34.0 (910)	52.1 (244)	63.2 (2104)	42.9 (268)
Follow-up	20.3 (143)	36.1 (36)	42.4 (255)	53.9 (13)
Systemic Drugs				
First	78.1 (910)	75.8 (244)	65.5 (2104)	66.0 (268)
Follow-up	57.3 (143)	66.7 (36)	68.2 (255)	61.5 (13)
Injections				
First	16.4 (910)	9.4 (244)	13.7 (2104)	28.4 (268)
Follow-up	20.3 (143)	5.6 (36)	24.3 (255)	23.1 (13)
Referral				
First	1.0 (880)	3.4 (235)	2.6 (2010)	48.9 (262)
Follow-up	5.6 (142)	8.3 (36)	5.7 (248)	53.9 (13)

TABLE IV-6-A

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED SELECTED SERVICES, CONTROLLING FOR SEVERITY INDICATORS, CONTROLLING FOR PATIENT AGE, LOW BACK PAIN
(ICDA = Various)

	SPECIALTY			
	Family Practice	Internal Medicine	Orthopedic Surgery	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
X-rays (non chest)				
60 and over	19.4 (72)	30.3 (109)	35.1 (154)	63.6 (11)
Under 60	23.6 (488)	27.6 (283)	34.3 (1051)	63.8 (174)
Hospitalization				
60 and over	36.6 (134)	41.8 (153)	43.6 (236)	15.4 (26)
Under 60	13.4 (403)	25.9 (224)	27.3 (954)	3.8 (159)
Referrals				
60 and over	14.5 (69)	33.0 (120)	16.8 (143)	63.6 (11)
Under 60	9.5 (465)	21.6 (273)	17.4 (1006)	63.5 (172)
Counseling				
60 and over	38.9 (72)	32.1 (109)	27.9 (154)	18.2 (11)
Under 60	35.3 (488)	33.9 (283)	28.3 (1051)	9.8 (174)

TABLE IV-6-B

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED X-RAYS (NON-CHEST), CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, LOW BACK PAIN (ICDA = Various)

	SPECIALTY			
	Family Practice	Internal Medicine	Orthopedic Surgery	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement				
Solo	24.2 (178)	26.8 (82)	32.9 (365)	57.7 (26)
Group[1]	21.6 (352)	28.4 (257)	36.3 (738)	68.8 (109)
MD Age				
Under 46	18.9 (280)	26.0 (146)	35.0 (711)	62.8 (129)
46 and over	23.9 (259)	29.5 (173)	33.3 (466)	73.9 (46)
Board Certified				
Yes	23.4 (423)	26.1 (268)	35.5 (1001)	0 (0)
No	21.4 (140)	33.1 (124)	28.2 (209)	63.4 (186)
Physician Sex				
Female	0 (12)	35.7 (14)	0 (0)	28.6 (14)
Male	23.4 (551)	28.0 (378)	34.2 (1210)	66.3 (172)
Health Manpower Shortage Area				
Yes	22.7 (22)	50.0 (4)	18.9 (37)	0 (0)
Partially	27.8 (223)	26.8 (198)	37.0 (649)	64.8 (88)
No	19.5 (318)	29.5 (190)	31.9 (524)	62.2 (98)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-6-C

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED HOSPITALIZATION, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, LOW BACK PAIN (ICDA = Various)

	SPECIALTY			
	Family Practice	Internal Medicine	Orthopedic Surgery	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement				
Solo	14.7 (163)	16.5 (79)	25.5 (357)	0 (26)
Group[1]	21.4 (341)	40.2 (246)	29.8 (728)	5.6 (108)
MD Age				
Under 46	15.5 (271)	38.2 (144)	33.1 (701)	5.4 (129)
46 and over	19.8 (242)	31.1 (164)	26.6 (458)	6.5 (46)
Board Certified				
Yes	20.8 (403)	36.4 (261)	28.1 (984)	0 (0)
No	14.2 (134)	23.3 (116)	42.2 (206)	5.4 (185)
Physician Sex				
Female	0 (12)	21.4 (14)	0 (0)	0 (14)
Male	19.6 (525)	32.8 (363)	30.5 (1190)	5.9 (171)
Health Manpower Shortage Area				
Yes	4.6 (22)	0 (4)	43.2 (37)	0 (0)
Partially	22.1 (204)	30.3 (188)	26.8 (634)	6.9 (87)
No	18.3 (311)	35.1 (185)	34.1 (519)	4.1 (98)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-6-D

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED COUNSELING, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, LOW BACK PAIN (ICDA = Various)

	SPECIALTY			
	Family Practice	Internal Medicine	Orthopedic Surgery	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement				
Solo	35.4 (178)	23.2 (82)	30.7 (365)	19.2 (26)
Group[1]	35.8 (352)	35.0 (257)	29.8 (738)	9.2 (109)
MD Age				
Under 46	40.7 (280)	34.3 (146)	29.8 (711)	9.3 (129)
46 and over	31.3 (259)	31.8 (173)	26.6 (466)	15.2 (46)
Board Certified				
Yes	36.6 (423)	33.6 (268)	29.4 (1001)	0 (0)
No	32.1 (140)	33.1 (124)	25.4 (209)	10.2 (186)
Physician Sex				
Female	25.0 (12)	21.4 (14)	0 (0)	14.3 (14)
Male	35.8 (551)	33.9 (378)	28.7 (1210)	9.9 (172)
Health Manpower Shortage Area				
Yes	59.1 (22)	25.0 (4)	21.6 (37)	0 (0)
Partially	29.6 (223)	29.8 (198)	27.7 (649)	11.4 (88)
No	38.1 (318)	37.4 (190)	30.3 (524)	9.2 (98)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-6-E

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS MADE REFERRALS, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, LOW BACK PAIN (ICDA = Various)

	SPECIALTY			
	Family Practice	Internal Medicine	Orthopedic Surgery	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement				
Solo	14.4 (160)	18.2 (77)	14.9 (342)	69.2 (26)
Group[1]	8.2 (342)	25.2 (246)	19.0 (706)	66.4 (107)
MD Age				
Under 46	11.5 (270)	25.5 (145)	16.6 (687)	69.8 (126)
46 and over	8.7 (241)	25.5 (161)	19.0 (436)	54.4 (46)
Board Certified				
Yes	9.0 (402)	26.1 (261)	17.2 (966)	0 (0)
No	13.5 (133)	21.4 (112)	17.7 (187)	63.4 (183)
Physician Sex				
Female	8.3 (12)	50.0 (14)	0 (0)	50.0 (14)
Male	10.1 (523)	23.7 (359)	17.3 (1153)	64.5 (169)
Health Manpower Shortage Area				
Yes	4.8 (21)	0 (4)	18.9 (37)	0 (0)
Partially	11.0 (201)	31.0 (184)	18.8 (602)	64.4 (87)
No	9.9 (313)	18.9 (185)	15.4 (514)	62.5 (96)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-6-F

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED SPECIFIED SERVICES, CONTROLLING FOR LOCATION OF ENCOUNTER, LOW BACK PAIN (ICDA = Various)

	SPECIALTY			
	Family Practice	Internal Medicine	Orthopedic Surgery	Emergency Medicine[1]
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
X-ray (non-chest)				
Office	20.4 (397)	29.7 (219)	42.8 (741)	65.3 (176)
Hospital	33.0 (115)	24.1 (133)	17.7 (391)	0 (0)
OPD, Clinic, ER	25.0 (40)	33.3 (39)	37.5 (72)	25.0 (8)
Counseling				
Office	36.0 (397)	35.6 (219)	35.5 (741)	9.1 (176)
Hospital	37.4 (115)	30.8 (133)	12.8 (391)	0 (0)
OPD, Clinic, ER	46.7 (30)	30.8 (39)	44.4 (72)	37.5 (8)
Hospitalization				
Office	1.6 (383)	2.4 (208)	3.2 (726)	5.1 (175)
Hospital	85.6 (111)	89.2 (129)	35.0 (387)	0 (0)
OPD, Clinic, ER	5.0 (40)	5.1 (39)	8.5 (71)	0 (8)

[1] For emergency medicine physicians, encounters in the emergency room are classified as office visits, and encounters in the office are classified with OPD, clinic and ER visits.

TABLE IV-6-G

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED SPECIFIED SERVICES, CONTROLLING FOR PATIENT SOURCE, LOW BACK PAIN (ICDA = Various)

	SPECIALTY			
	Family Practice	Internal Medicine	Orthopedic Surgery	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
X-ray (non-chest)				
Self-referred	23.4 (530)	29.0 (321)	35.9 (680)	63.6 (162)
Other Professional	20.0 (15)	26.9 (67)	32.1 (526)	65.2 (23)
Counseling				
Self-referred	36.2 (530)	35.5 (321)	31.0 (680)	9.9 (162)
Other Professional	40.0 (15)	25.4 (67)	25.9 (526)	13.0 (23)
Hospitalization				
Self-referred	18.5 (520)	25.8 (310)	25.3 (669)	3.7 (161)
Other Professional	46.7 (15)	62.7 (67)	37.5 (518)	17.4 (23)
Referral				
Self-referred	9.7 (518)	20.2 (307)	13.8 (643)	62.5 (160)
Other Professional	26.7 (15)	45.5 (66)	21.5 (507)	69.6 (23)

TABLE IV-6-H

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED SPECIFIED SERVICES, CONTROLLING FOR FIRST VERSUS FOLLOW-UP VISITS, LOW BACK PAIN (ICDA = Various)

	SPECIALTY			
	Family Practice	Internal Medicine	Orthopedic Surgery	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
X-ray (non-chest)				
First	24.0 (296)	31.1 (193)	56.3 (412)	69.1 (165)
Follow-up	21.7 (267)	25.3 (198)	22.8 (798)	19.1 (21)
Counseling				
First	35.5 (296)	30.6 (193)	30.1 (412)	9.7 (165)
Follow-up	35.6 (267)	36.4 (198)	27.9 (798)	14.3 (21)
Hospitalization				
First	10.5 (276)	16.0 (181)	19.2 (401)	6.1 (164)
Follow-up	28.4 (261)	47.7 (195)	36.3 (789)	0 (21)
Referral				
First	4.7 (276)	20.1 (179)	23.3 (382)	63.6 (162)
Follow-up	15.8 (259)	29.0 (193)	14.3 (771)	61.9 (21)

TABLE IV-7-A

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED SELECTED SERVICES, CONTROLLING FOR PATIENT AGE, PNEUMONIA (ICDA = 480-486)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
X-rays				
60 and over	39.7 (204)	48.4 (512)	0 (1)	79.3 (29)
Under 60	46.8 (314)	58.6 (314)	15.9 (1933)	89.5 (57)
Laboratory tests				
60 and over	27.5 (204)	31.1 (512)	0 (1)	58.6 (29)
Under 60	26.4 (314)	34.4 (314)	15.2 (1933)	64.9 (57)
Cultures				
60 and over	6.9 (204)	23.4 (512)	100.0 (1)	6.9 (29)
Under 60	8.3 (314)	23.9 (314)	12.6 (1933)	8.8 (57)
Systemic Drugs				
60 and over	48.5 (204)	66.6 (512)	100.0 (1)	27.6 (29)
Under 60	59.6 (314)	65.6 (314)	62.5 (1933)	49.1 (57)
Injections				
60 and over	14.7 (204)	16.4 (512)	0 (1)	24.1 (29)
Under 60	11.5 (314)	12.4 (314)	7.8 (1933)	38.6 (57)
Referrals				
60 and over	9.3 (194)	12.9 (489)	100.0 (1)	77.8 (27)
Under 60	6.7 (298)	14.6 (301)	3.1 (1852)	67.9 (56)

TABLE IV-7-B

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED CHEST X-RAYS, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, PNEUMONIA (ICDA = 480-486)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement				
Solo	49.7 (145)	51.0 (194)	9.2 (477)	70.0 (10)
Group[1]	42.4 (356)	47.7 (499)	17.0 (1339)	87.0 (54)
MD Age				
Under 46	39.5 (261)	54.8 (336)	16.2 (1057)	82.5 (57)
46 and over	49.0 (241)	50.7 (367)	16.0 (796)	79.3 (29)
Board Certified				
Yes	43.4 (394)	49.4 (474)	15.1 (1483)	0 (0)
No	46.0 (126)	54.4 (364)	18.1 (458)	82.6 (92)
Physician Sex				
Female	0 (6)	75.0 (16)	11.9 (253)	100.0 (3)
Male	44.6 (514)	51.1 (822)	16.4 (1688)	82.0 (89)
Health Manpower Shortage Area				
Yes	42.4 (33)	50.0 (2)	15.1 (53)	100.0 (2)
Partially	45.6 (182)	55.3 (409)	16.6 (1002)	81.1 (53)
No	43.3 (305)	48.0 (427)	15.0 (886)	83.8 (37)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-7-C

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED LABORATORY TESTS, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, PNEUMONIA (ICDA = 480-486)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement				
Solo	34.5 (145)	18.0 (194)	12.2 (477)	50.0 (10)
Group[1]	24.4 (356)	31.1 (499)	15.8 (1339)	75.9 (54)
MD Age				
Under 46	24.9 (261)	36.3 (336)	11.9 (1057)	57.9 (57)
46 and over	28.6 (241)	26.4 (367)	20.2 (796)	65.5 (29)
Board Certified				
Yes	27.4 (394)	27.6 (474)	14.2 (1483)	0 (0)
No	24.6 (126)	37.4 (364)	18.1 (458)	60.9 (92)
Physician Sex				
Female	0 (6)	75.0 (16)	10.7 (253)	0 (3)
Male	27.0 (514)	31.0 (822)	15.8 (1688)	62.9 (89)
Health Manpower Shortage Area				
Yes	12.1 (33)	50.0 (2)	15.1 (53)	100.0 (2)
Partially	32.4 (182)	33.7 (409)	13.6 (1002)	66.0 (53)
No	24.9 (305)	30.0 (427)	16.9 (886)	51.4 (37)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-7-D

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED CULTURES, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, PNEUMONIA (ICDA = 480-486)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement				
Solo	12.4 (145)	16.0 (194)	14.7 (477)	0 (10)
Group[1]	5.9 (356)	19.6 (499)	11.1 (1339)	5.6 (54)
MD Age				
Under 46	6.5 (261)	30.1 (336)	13.3 (1057)	12.3 (57)
46 and over	9.5 (241)	17.4 (367)	12.8 (796)	3.5 (29)
Board Certified				
Yes	8.9 (394)	18.8 (474)	13.5 (1483)	0 (0)
No	4.0 (126)	29.1 (364)	10.3 (458)	8.7 (92)
Physician Sex				
Female	0 (6)	56.3 (16)	11.1 (253)	0 (3)
Male	7.8 (514)	22.6 (822)	13.0 (1688)	9.0 (89)
Health Manpower Shortage Area				
Yes	0 (33)	0 (2)	3.8 (53)	0 (2)
Partially	9.3 (182)	24.2 (409)	15.2 (1002)	5.7 (53)
No	7.5 (305)	22.5 (427)	10.5 (886)	13.5 (37)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-7-E

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PRESCRIBED SYSTEMIC DRUGS, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, PNEUMONIA (ICDA = 480-486)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement				
Solo	55.9 (145)	70.6 (194)	61.2 (477)	20.0 (10)
Group[1]	55.6 (356)	65.7 (499)	63.4 (1339)	50.0 (54)
MD Age				
Under 46	52.1 (261)	66.7 (336)	61.5 (1057)	40.4 (57)
46 and over	57.3 (241)	65.1 (367)	64.2 (796)	37.9 (29)
Board Certified				
Yes	57.4 (394)	64.4 (474)	63.4 (1483)	0 (0)
No	48.4 (126)	67.9 (364)	59.6 (458)	40.2 (92)
Physician Sex				
Female	0 (6)	62.5 (16)	66.0 (253)	33.3 (3)
Male	55.8 (514)	65.9 (822)	62.0 (1688)	40.5 (89)
Health Manpower Shortage Area				
Yes	36.4 (33)	100.0 (2)	67.9 (53)	100.0 (2)
Partially	56.0 (182)	66.3 (409)	60.5 (1002)	37.7 (53)
No	56.7 (305)	65.3 (427)	64.5 (886)	40.5 (37)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-7-F

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS GAVE INJECTIONS, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, PNEUMONIA (ICDA = 480-486)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement				
Solo	17.9 (145)	15.5 (194)	12.2 (477)	20.0 (10)
Group[1]	11.0 (356)	10.8 (499)	6.7 (1339)	38.9 (54)
MD Age				
Under 46	10.7 (261)	14.3 (336)	5.1 (1057)	36.8 (57)
46 and over	14.9 (241)	16.4 (367)	12.3 (796)	27.6 (29)
Board Certified				
Yes	12.9 (394)	10.6 (474)	6.3 (1483)	0 (0)
No	11.9 (126)	20.1 (364)	12.9 (458)	32.6 (92)
Physician Sex				
Female	0 (6)	12.5 (16)	4.7 (253)	0 (3)
Male	12.8 (514)	14.7 (822)	8.4 (1688)	33.7 (89)
Health Manpower Shortage Area				
Yes	12.1 (33)	0 (2)	11.3 (53)	50.0 (2)
Partially	15.9 (182)	14.7 (409)	5.8 (1002)	28.3 (53)
No	10.8 (305)	14.8 (427)	10.1 (886)	37.8 (37)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-7-G

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS MADE REFERRALS, CONTROLLING FOR SELECTED PHYSICIAN CHARACTERISTICS, PNEUMONIA (ICDA = 480-486)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Practice Arrangement				
Solo	6.6 (136)	10.7 (187)	4.8 (458)	50.0 (10)
Group[1]	8.0 (339)	11.7 (469)	2.2 (1279)	71.2 (52)
MD Age				
Under 46	7.5 (241)	17.8 (321)	3.2 (1007)	79.3 (53)
46 and over	8.5 (235)	11.5 (348)	2.9 (766)	59.3 (27)
Board Certified				
Yes	7.2 (373)	11.3 (460)	2.7 (1425)	0 (0)
No	9.2 (120)	16.4 (336)	4.4 (435)	71.8 (85)
Physician Sex				
Female	0 (6)	6.3 (16)	5.6 (249)	100.0 (3)
Male	7.8 (487)	13.6 (780)	2.7 (1611)	70.7 (82)
Health Manpower Shortage Area				
Yes	13.6 (22)	0 (2)	1.9 (53)	0 (2)
Partially	12.4 (170)	16.0 (381)	4.1 (951)	66.7 (48)
No	4.7 (301)	11.1 (413)	2.1 (856)	82.9 (35)

[1] Group includes partnerships and unincorporated and incorporated group practices.

TABLE IV-7-H

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED SPECIFIED SERVICES, CONTROLLING FOR PATIENT SOURCE, PNEUMONIA (ICDA = 480-486)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Chest X-ray				
Self-referred	45.3 (488)	52.0 (571)	15.3 (1816)	85.9 (71)
Other Professional	31.8 (22)	51.9 (260)	28.3 (92)	86.7 (15)
Laboratory tests				
Self-referred	28.3 (488)	28.9 (571)	14.8 (1816)	57.8 (71)
Other Professional	4.6 (22)	38.9 (260)	25.0 (92)	86.7 (15)
Cultures				
Self-referred	7.8 (488)	19.8 (571)	12.7 (1816)	9.9 (71)
Other Professional	9.1 (22)	31.5 (260)	16.3 (92)	0 (15)
Systemic Drugs				
Self-referred	57.2 (488)	67.3 (571)	63.3 (1816)	43.7 (71)
Other Professional	31.8 (22)	64.6 (260)	45.7 (92)	26.7 (15)
Injections				
Self-referred	13.3 (488)	12.4 (571)	7.9 (1816)	35.2 (71)
Other Professional	4.6 (22)	20.0 (260)	9.8 (92)	26.7 (15)
Referrals				
Self-referred	6.6 (469)	8.1 (543)	2.4 (1758)	67.1 (70)
Other Professional	31.8 (22)	25.2 (250)	16.5 (91)	92.3 (13)

TABLE IV-7-I

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED SPECIFIED SERVICES, CONTROLLING FOR LOCATION OF ENCOUNTER, PNEUMONIA (ICDA = 480-486)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine[1]
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Chest X-ray				
Office	47.5 (219)	65.3 (147)	11.7 (1542)	86.2 (87)
Hospital	40.2 (256)	48.1 (645)	39.8 (231)	0 (0)
OPD, Clinic, ER	51.2 (41)	55.8 (43)	21.4 (154)	0 (2)
Laboratory tests				
Office	25.1 (219)	26.5 (147)	11.4 (1542)	63.2 (87)
Hospital	26.6 (256)	33.2 (645)	38.1 (231)	0 (0)
OPD, Clinic, ER	39.0 (41)	32.6 (43)	19.5 (154)	0 (2)
Cultures				
Office	4.6 (219)	9.5 (147)	11.4 (1542)	9.2 (87)
Hospital	10.6 (256)	27.0 (645)	20.8 (231)	0 (0)
OPD, Clinic, ER	7.3 (41)	16.3 (43)	14.9 (154)	0 (2)
Systemic Drugs				
Office	60.3 (219)	64.0 (147)	65.2 (1542)	42.5 (87)
Hospital	48.1 (256)	66.4 (645)	45.5 (231)	0 (0)
OPD, Clinic, ER	75.6 (41)	69.8 (43)	63.0 (154)	0 (2)
Injections				
Office	11.4 (219)	4.8 (147)	7.1 (1542)	34.5 (87)
Hospital	11.7 (256)	16.7 (645)	17.3 (231)	0 (0)
OPD, Clinic, ER	26.8 (41)	14.0 (43)	1.3 (154)	0 (2)
Referrals				
Office	2.4 (206)	2.9 (138)	2.4 (1474)	72.3 (83)
Hospital	11.4 (245)	15.6 (614)	7.5 (227)	0 (0)
OPD, Clinic, ER	12.2 (41)	16.7 (42)	3.3 (150)	0 (2)

[1] For emergency medicine physicians, encounters in the emergency room are classified as office visits, and encounters in the office are classified with OPD, clinic and ER visits.

TABLE IV-7-J

PERCENTAGE OF PATIENT ENCOUNTERS IN WHICH PHYSICIANS PERFORMED SPECIFIED SERVICES, CONTROLLING FOR FIRST VERSUS FOLLOW-UP VISITS, PNEUMONIA (ICDA = 480-486)

	SPECIALTY			
	Family Practice	Internal Medicine	Pediatrics	Emergency Medicine
	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)	Percent N (unweighted)
Chest X-ray				
First	49.4 (168)	61.3 (269)	11.0 (1396)	85.9 (85)
Follow-up	41.5 (352)	46.6 (565)	28.1 (545)	42.9 (7)
Laboratory tests				
First	31.6 (168)	42.8 (269)	12.5 (1396)	63.5 (85)
Follow-up	24.4 (352)	26.6 (565)	22.0 (545)	28.6 (7)
Cultures				
First	8.3 (168)	29.7 (269)	14.3 (1396)	9.4 (85)
Follow-up	7.4 (352)	20.4 (565)	8.6 (545)	0 (7)
Systemic Drugs				
First	69.1 (168)	69.5 (269)	65.2 (1396)	41.2 (85)
Follow-up	48.6 (352)	63.9 (565)	55.6 (545)	28.6 (7)
Injections				
First	14.9 (168)	18.2 (269)	6.4 (1396)	34.1 (85)
Follow-up	11.7 (352)	13.1 (565)	11.7 (545)	14.3 (7)
Referrals				
First	6.6 (151)	17.0 (247)	2.9 (1332)	74.4 (78)
Follow-up	8.2 (342)	11.9 (545)	3.6 (528)	42.9 (7)

TABLE IV-8-A

REGRESSION COEFFICIENTS PREDICTING COMPONENTS OF CARE FOR ESSENTIAL BENIGN HYPERTENSION (ICDA-401), ALL VISITS (N=3985)

	Chest X-ray		Systemic Drugs		Counseling		Laboratory Tests		Electro-Cardiogram	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	.13		.27		.38		.24		.10	
Physician Specialty:										
Family Practice	-.10	(85.34)***	-.03	(2.37)	-.03	(4.15)*	-.07	(19.38)***	-.12	(102.84)***
Cardiology	.01	(.23)	-.15	(42.11)***	.02	(.73)	-.03	(2.46)	.05	(8.60)**
Physician Characteristics:										
Age	-.001	(3.54)	.001	(.91)	-.004	(32.42)***	-.001	(1.31)	-.001	(3.14)
Board Certification	-.005	(.21)	-.04	(5.75)*	-.08	(30.40)***	-.02	(1.28)	-.002	(.04)
Solo Practice	-.01	(1.00)	.01	(.15)	.02	(3.00)	-.002	(.01)	.003	(.09)
Patient Characteristics:										
Age	-.000	(1.25)	.001	(4.49)*	-.002	(24.07)***	-.001	(2.58)	-.000	(1.34)
Sex (male=0, female=1)	-.02	(5.43)*	.04	(7.07)**	-.01	(.16)	-.02	(2.09)	-.03	(5.25)*
Multiple Conditions	.01	(.68)	.02	(1.55)	.10	(55.60)***	.08	(29.25)***	.01	(.77)
Severity-Complexity	.06	(75.06)***	.03	(7.23)**	.04	(18.80)***	.09	(84.80)***	.07	(96.93)***
Urgency	.01	(2.05)	.04	(14.76)***	.02	(5.91)*	.003	(.16)	.01	(1.62)
Encounter Characteristics:										
Office Visit	-.03	(4.56)*	.17	(55.95)***	.05	(7.40)**	-.05	(5.06)*	.01	(.12)
Professional Referral	.01	(.68)	-.05	(3.74)	.03	(2.26)	.05	(6.04)*	.04	(5.60)*
Number of Visits	-.002	(18.54)***	.003	(31.22)***	-.000	(1.08)	-.001	(2.86)	-.001	(12.64)***
Joint F-statistics, specialty dummies removed	45.75***		21.07***		2.94		9.90***		64.85***	
F-statistic	22.85***		17.36***		18.71***		18.55***		28.14***	
Adjusted R^2	.07		.05		.05		.05		.08	
Mean of Dep. Var.	.11		.64		.23		.28		.14	

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*p<.05; **p<.01, ***p<.001

TABLE IV-8-B

REGRESSION COEFFICIENTS PREDICTING COMPONENTS OF CARE FOR ESSENTIAL BENIGN HYPERTENSION (ICDA-401), FIRST VISITS IN OFFICE (N-838)

	Chest X-ray		Systemic Drugs		Counseling		Laboratory Tests		Electro-Cardiogram	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	.29		.02		.46		.43		.22	
Physician Specialty:										
Family Practice	-.15	(33.52)***	.05	(2.1)	-.01	(.21)	-.10	(8.73)**	-.20	(45.97)***
Cardiology	.04	(1.13)	-.11	(3.70)	.02	(.12)	-.04	(.58)	.56	(1.60)
Physician Characteristics:										
Age	-.003	(6.57)*	.004	(4.39)*	-.003	(4.87)*	-.003	(2.98)	-.002	(1.71)
Board of Certification	.06	(4.87)*	.04	(1.53)	-.07	(5.63)*	.03	(.90)	.03	(1.59)
Solo Practice	-.03	(1.22)	-.06	(2.42)	.03	(1.19)	.003	(.01)	-.09	(.10)
Patient Characteristics:										
Age	-.002	(6.16)*	.003	(6.45)*	-.003	(10.45)**	-.003	(9.32)**	-.001	(2.64)
Sex (male-0, female=1)	-.01	(.34)	.06	(2.69)	-.04	(1.83)	-.01	(.04)	-.05	(3.59)
Multiple Conditions	.01	(.21)	.04	(1.5)	.10	(11.93)**	.06	(3.26)	.02	(.42)
Severity-Complexity	.08	(19.86)***	.001	(.002)	.03	(2.16)	.10	(20.12)***	.10	(29.97)***
Urgency	.01	(.33)	.06	(7.87)**	.01	(.25)	.001	(.003)	.005	(.09)
Encounter Characteristics:										
Office Visit	---		---		---		---		---	
Professional Referral	.03	(.34)	.06	(.81)	.02	(.21)	.03	(.19)	.05	(1.28)
Number of Visits	---		---		---		---		---	
Joint F-statistics, specialty dummies removed	19.90***		3.77*		0.22		4.37*		27.35***	
F-statistic	9.41***		3.82***		3.94***		5.26***		11.36***	
Adjusted R^2	.10		.04		.04		.05		.12	
Mean of Dep. Var.	.16		.55		.20		.31		.20	

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*p<.05; **p<.01; ***p<.001

TABLE IV-9-A

REGRESSION COEFFICIENTS PREDICTING COMPONENTS OF CARE FOR ISCHEMIC HEART DISEASE (ICDA=412,413), ALL VISITS (N=4608)

	Chest X-ray		Systemic Drugs		Counseling		Laboratory Tests		Electro-Cardiogram	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	-.13		.35		.19		.13		.11	
Physician Specialty:										
Family Practice	-.07	(17.95)***	-.05	(5.83)*	-.03	(2.86)	-.10	(20.15)***	-.15	(48.30)***
Cardiology	-.01	(.68)	-.22	(184.14)***	-.005	(.12)	-.10	(43.08)***	.03	(3.99)*
Physician Characteristics:										
Age	.001	(4.34)*	.000	(.25)	-.001	(1.17)	.002	(7.74)**	.000	(.12)
Board Certification	-.01	(.79)	-.11	(58.24)***	-.03	(6.88)**	-.65	(22.46)***	-.04	(8.20)**
Solo Practice	-.04	(10.88)**	.02	(1.35)	.01	(.46)	-.01	(.16)	-.01	(.46)
Patient Characteristics:										
Age	.000	(.76)	.001	(3.88)*	-.001	(8.48)**	-.001	(2.98)	-.002	(12.37)***
Sex (male=0, female=1)	-.01	(1.10)	.03	(3.64)	-.002	(.02)	.02	(1.26)	-.02	(1.99)
Multiple Conditions	.01	(.54)	.06	(14.84)***	.06	(26.36)***	.05	(10.68)**	-.01	(.40)
Severity-Complexity	.09	(144.16)***	.04	(17.32)***	.05	(41.73)***	.08	(85.65)***	.11	(150.26)***
Urgency	.03	(25.20)***	.04	(21.26)***	.01	(2.13)	.03	(14.33)***	.06	(44.75)***
Encounter Characteristics:										
Office Visit	-.02	(2.44)	.09	(30.83)***	.03	(5.33)*	-.03	(3.19)	.08	(31.89)***
Professional Referral	.04	(7.05)**	-.05	(9.99)*	.01	(.31)	-.003	(.04)	.03	(3.83)
Number of Visits	-.007	(7.17)**	.001	(8.04)**	-.000	(.85)	.000	(.02)	-.001	(6.64)*
Joint F-statistics, specialty dummies removed	9.02**		92.79***		1.44		25.64***		32.02***	
F-statistic	28.31***		40.14***		9.34***		21.08***		37.90***	
Adjusted R^2	.07		.10		.02		.05		.09	
Mean of Dep. Var.	.18		.54		.23		.33		.36	

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*p<.05; **p<.01, ***p<.001

TABLE IV-9-B

REGRESSION COEFFICIENTS PREDICTING COMPONENTS OF CARE FOR ISCHEMIC HEART DISEASE (ICDA=412,413), FIRST VISITS IN OFFICE (N=542)

	Chest X-ray		Systemic Drugs		Counseling		Laboratory Tests		Electro-Cardiogram	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	.09		.42		.16		-.02		.14	
Physician Specialty:										
Family Practice	-.08	(2.52)	.11	(3.06)	.06	(1.18)	-.02	(.08)	-.11	(3.55)
Cardiology	.05	(1.99)	-.11	(4.77)*	.03	(.60)	.02	(.13)	.15	(10.48)**
Physician Characteristics:										
Age	.000	(.005)	.000	(.003)	.001	(.36)	.01	(12.47)***	.002	(.78)
Board Certification	.06	(3.09)	.04	(.63)	.03	(.81)	.01	(.02)	.05	(1.47)
Solo Practice	-.07	(3.22)	.05	(1.23)	.07	(2.93)	-.04	(.76)	-.005	(.11)
Patient Characteristics:										
Age	-.001	(.70)	.000	(.001)	-.002	(1.63)	-.001	(.58)	-.002	(1.04)
Sex (male=0, female=1)	-.000	(.000)	.04	(.94)	.03	(.46)	.02	(.28)	-.04	(.98)
Multiple Conditions	-.002	(.005)	.08	(3.51)	.03	(.92)	.04	(.97)	-.01	(.08)
Severity-Complexity	.13	(33.29)***	-.04	(1.69)	.01	(.38)	.08	(9.12)**	.14	(24.28)***
Urgency	-.04	(5.01)	.04	(2.45)	-.01	(.09)	-.06	(5.87)*	.04	(2.42)
Encounter Characteristics:										
Office Visit	---		---		---		---		---	
Professional Referral	.01	(.03)	-.01	(.06)	.04	(.71)	-.04	(.54)	.07	(2.25)
Number of Visits	---		---		---		---		---	
Joint F-statistics, specialty dummies removed	3.03*		5.81**		0.69		0.16		10.13***	
F-statistic	5.35***		2.51**		.92		2.62**		8.25***	
Adjusted R^2	.08		.03		0		.03		.13	
Mean of Dep. Var.	.20		.51		.21		.33		.41	

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*p<.05; **p<.01, ***p<.001

TABLE IV-10-A

REGRESSION COEFFICIENTS PREDICTING COMPONENTS OF CARE FOR ASTHMA (ICDA=493), ALL VISITS (N=493)

	Chest X-ray		Laboratory Tests		Systemic Drugs		Injection Other		Pulmonary Function	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	.08		.03		.70		-.41		-.04	
Physician Specialty:-										
Family Practice	-.14	(14.42)***	-.13	(14.40)***	-.13	(7.02)**	.04	(.94)	-.02	(.95)
Pediatrics	-.13	(9.17)**	-.12	(8.02)**	-.14	(5.53)*	.15	(8.34)**	-.05	(3.93)*
Physician Characteristics:										
Age	.001	(.31)	.000	(.19)	-.004	(7.18)**	.01	(17.81)***	.000	(.02)
Board Certification	-.02	(.75)	.02	(.37)	.02	(.46)	-.01	(.21)	.03	(2.87)
Solo Practice	-.04	(1.72)	.01	(.12)	-.07	(3.54)	.03	(1.04)	.01	(.08)
Patient Characteristics:										
Age	-.001	(2.23)	-.002	(4.39)*	-.001	(.42)	-.002	(2.96)	-.000	(.21)
Sex (male=0, female-1)	.01	(.27)	-.04	(3.05)	.03	(.67)	-.04	(1.57)	-.004	(.08)
Multiple Conditions	.06	(5.74)*	.07	(7.45)**	.03	(.62)	.03	(.68)	.03	(2.85)
Severity-Complexity	.09	(22.54)***	.12	(41.77)***	.02	(.75)	-.01	(.34)	.03	(7.18)**
Urgency	.02	(2.68)	.01	(.67)	.06	(8.13)**	.10	(34.31)***	.01	(.73)
Encounter Characteristics:										
Office Visit	-.08	(9.40)**	-.08	(9.31)**	.09	(5.57)*	.15	(20.81)***	-.01	(.33)
Professional Referral	.05	(1.82)	-.005	(.02)	-.02	(.17)	-.001	(.000)	.10	(18.21)***
Number of Visits	-.003	(8.44)**	-.001	(.57)	-.003	(4.66)*	.005	(16.40)***	-.001	(2.00)
Joint F-statistics, specialty dummies removed	7.73***		7.50***		4.01*		4.54*		1.98	
F-statistic	8.43***		7.76***		3.28***		11.16***		5.29***	
Adjusted R^2	.10		.09		.03		.13		.06	
Mean of Dep. Var.	.17		.14		.67		.27		.05	

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*p<.05; **p<.01, ***p<.001

TABLE IV-10-A (cont.)

Independent Variables	Counseling		Referral	
	Coeff	(F)	Coeff	(F)
Constant	.27		.04	
Physician Specialty:				
Family Practice	.07	(3.16)	-.04	(1.65)
Pediatrics	-.10	(3.48)	-.01	(.02)
Physician Characteristics:				
Age	-.004	(7.37)**	.000	(.001)
Board Certification	.06	(3.46)	-.02	(.67)
Solo Practice	.01	(.07)	.01	(.10)
Patient Characteristics:				
Age	-.000	(.28)	-.000	(.16)
Sex (male=0, female=1)	.04	(2.27)	-.01	(.25)
Multiple Conditions	.08	(7.04)**	-.03	(2.03)
Severity-Complexity	.02	(.63)	.03	(2.56)
Urgency	.02	(.98)	.04	(9.32)**
Encounter Characteristics:				
Office Visit	-.004	(.02)	-.08	(11.51)**
Professional Referral	-.03	(.50)	.12	(13.12)***
Number of Visits	-.001	(1.38)	-.002	(3.27)
Joint F-statistics, specialty Dummies removed	7.89***		1.09	
F-statistic	3.67***		6.02***	
Adjusted R^2	.04		.07	
Mean of Dep. Var.	.23		.11	

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*p<.05; **p<.01, ***p<.001

TABLE IV-10-B

REGRESSION COEFFICIENTS PREDICTING COMPONENTS OF CARE FOR ASTHMA (ICDA-493), FIRST VISITS IN OFFICE (N=259)

	Chest X-ray		Laboratory Tests		Systemic Drugs		Injection Other		Pulmonary Function	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	.53		.30		.71		-.27		.09	
Physician Specialty:										
Family Practice	-.21	(9.99)**	-.16	(5.58)*	-.05	(.21)	.06	(.32)	.03	(.51)
Pediatrics	-.20	(7.07)**	-.16	(4.57)*	-.09	(.60)	.34	(9.38)**	-.05	(1.52)
Physician Characteristics:										
Age	-.01	(10.07)**	-.001	(.35)	-.01	(3.84)	.01	(3.58)	.000	(.20)
Board Certification	-.03	(.48)	.03	(.48)	.01	(.01)	-.06	(.65)	-.01	(.24)
Solo Practice	-.01	(.03)	.01	(.07)	-.11	(3.51)	-.03	(.31)	-.06	(6.32)*
Patient Characteristics:										
Age	-.000	(.02)	-.001	(.78)	-.002	(1.01)	.000	(.001)	.000	(.34)
Sex (male=0, female=1)	.000	(.000)	-.06	(2.77)	.002	(.002)	-.01	(.07)	-.04	(3.99)*
Multiple Conditions	.02	(.22)	.02	(.22)	-.02	(.10)	.10	(2.21)	-.001	(.001)
Severity-Complexity	.09	(10.15)**	.11	(15.16)***	.04	(1.10)	-.03	(.44)	.04	(6.41)*
Urgency	-.05	(3.58)	-.07	(7.29)**	.11	(8.31)**	.09	(5.18)*	-,03	(5.07)*
Encounter Characteristics:										
Office Visit	---		---		---		---		---	
Professional Referral	.06	(.60)	-.02	(.07)	.37	(.10)	-.02	(.03)	.05	(1.14)
Number of Visits	---		---		---		---		---	
Joint F-statistics, specialty dummies removed	5.14**		2.98		.31		7.55***		3.47*	
F-statistic	3.67***		2.67**		2.68**		4.05***		2.96**	
Adjusted R^2	.10		.07		.07		.12		.08	
Mean of Dep. Var.	.11		.10		.71		.34		.03	

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*p<.05; **p<.01, ***p<.001

TABLE IV-10-B (cont.)

Independent Variables	Counseling		Rèferral	
	Coeff	(F)	Coeff	(F)
Constant	.26		-.84	
Physician Specialty:				
Family Practice	.04	(.19)	-.08	(1.36)
Pediatrics	-.12	(1.45)	-.03	(.17)
Physician Characteristics:				
Age	-.004	(2.62)	.001	(.34)
Board Certification	.03	(.34)	.02	(.11)
Solo Practice	.01	(.02)	.004	(.01)
Patient Characteristics:				
Age	-.002	(2.21)	.001	(.17)
Sex (male=0, female=1)	.02	(.23)	-.05	(1.72)
Multiple Conditions	.10	(2.55)	-.01	(.06)
Severity-Complexity	.01	(.04)	.03	(.90)
Urgency	.05	(2.01)	.04	(2.66)
Encounter Characteristics:				
Office Visit	---		---	
Professional Referral	.06	(.37)	.19	(5.60)*
Number of Visits	---		---	
Joint F-statistics, specialty dummies removed	2.52		.87	
F-statistic	1.47		1.63	
Adjusted R^2	.02		.03	
Mean of Dep. Var.	.19		.10	

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*p<.05, **p<.01, ***p<.001

TABLE IV-11-A

REGRESSION COEFFICIENTS PREDICTING COMPONENTS OF CARE FOR TONSILLITIS AND PHARYNGITIS (ICDA=462, 463), ALL VISITS (N=3424)

	Chest X-ray		Laboratory Tests		Cultures		Systemic Drugs		Injection Other	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	-.02		.09		.71		.26		-.24	
Physician Specialty:										
Family Practice	-.02	(10.51)**	-.06	(7.32)**	-.18	(24.91)***	-.02	(.32)	.07	(7.91)**
Pediatrics	-.02	(6.21)*	-.11	(18.65)***	.13	(11.69)**	-.15	(17.48)***	.02	(.56)
Physician Characteristics:										
Age	.000	(2.33)	.002	(17.06)***	-.01	(60.68)***	.002	(8.60)**	.002	(12.23)***
Board Certification	.002	(.34)	.02	(1.83)	.04	(4.20)*	.04	(3.77)	-.02	(1.45)
Solo Practice	.002	(.49)	-.03	(6.31)*	-.04	(4.35)*	.02	(1.28)	.02	(3.91)*
Patient Characteristics:										
Age	.001	(27.76)***	.001	(2.63)	.001	(2.84)	.000	(.002)	-.000	(.62)
Sex (male=0, female=1)	-.01	(10.08)**	-.002	(.08)	.02	(1.37)	-.01	(.56)	-.02	(2.56)
Multiple Conditions	.01	(12.00)**	.06	(19.00)***	-.06	(10.16)**	.05	(7.65)**	-.005	(.10)
Severity-Complexity	.01	(9.70)**	.03	(14.41)***	.01	(1.39)	.04	(11.15)**	-.05	(37.19)***
Urgency	.01	(5.62)*	.01	(.31)	.01	(.81)	.09	(44.60)***	.05	(19.64)***
Encounter Characteristics:										
Office Visit	-.03	(16.28)***	-.01	(22.97)***	.02	(.26)	.07	(5.90)*	.04	(3.30)
Professional Referral	.06	(34.01)***	.04	(1.50)	.09	(3.09)	-.04	(.79)	-.04	(1.10)
Number of Visits	.01	(36.86)***	.01	(3.17)	-.02	(9.68)**	-.01	(2.15)	.01	(2.47)
Joint F-statistics, specialty dummies removed	5.32**		10.57***		104.52***		22.30***		8.02***	
F-statistic	18.25***		11.27***		27.25***		11.34***		10.02***	
Adjusted R^2	.06		.04		.09		.04		.03	
Mean of Dep. Var.	.01		.12		.52		.69		.15	

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*p<.05, **p<.01, ***p<.001

TABLE IV-11-A (cont.)

	Referral	
Independent Variables	Coeff	(F)
Constant	.07	
Physician Specialty:		
Family Practice	-.01	(.40)
Pediatrics	.004	(.10)
Physician Characteristics:		
Age	.000	(.02)
Board Certification	-.003	(.20)
Solo Practice	.002	(.15)
Patient Characteristics:		
Age	-.000	(2.11)
Sex (male=0, female=1)	-.01	(2.40)
Multiple Conditions	.03	(21.46)***
Severity - Complexity	.001	(.07)
Urgency	-.000	(.001)
Encounter Characteristics:		
Office Visit	-.07	(43.46)***
Professional Referral	.22	(182.59)***
Number of Visits	.01	(21.01)***
Joint F-statistics, specialty dummies removed	1.31	
F-statistic	24.57***	
Adjusted R^2	.08	
Mean of Dep. Var.	.03	

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*$p<.05$, **$p<.01$, **$p<.001$

TABLE IV-11-B

REGRESSION COEFFICIENTS PREDICTING COMPONENTS OF CARE FOR TONSILLITIS AND PHARYNGITIS (ICDA-462, 463), OFFICE FOLLOWUP VISITS (N=345)

	Chest X-ray		Laboratory Tests		Cultures		Systemic Drugs		Injection Other	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	.03		.15		.34		-.09		-.48	
Physician Specialty:										
Family Practice	-.06	(4.04)*	-.10	(1.11)	-.07	(.41)	.07	(.37)	.09	(.86)
Pediatrics	-.05	(2.80)	-.15	(2.30)	.16	(1.70)	.19	(2.23)	.04	(.17)
Physician Characteristics:										
Age	.000	(.32)	.001	(.37)	-.01	(3.83)	.01	(3.68)	.01	(6.24)*
Board Certification	.01	(.96)	-.01	(.07)	.03	(.23)	.06	(.97)	-.06	(1.22)
Solo Practice	-.01	(1.00)	-.02	(.27)	.05	(.90)	-.03	(.30)	.05	(1.29)
Patient Characteristics:										
Age	.001	(3.17)	-.001	(.30)	.004	(2.24)	.003	(1.15)	-.005	(4.26)*
Sex (male=0, female=1)	-.01	(.60)	.01	(.02)	.14	(8.09)**	.08	(2.24)	-.05	(1.33)
Multiple Conditions	.004	(.11)	.01	(.01)	-.10	(2.72)	.08	(1.73)	.01	(.01)
Severity-Complexity	.02	(3.78)	.05	(2.79)	.03	(.66)	-.02	(.43)	.06	(3.46)
Urgency	-.01	(.41)	.02	(.36)	-.01	(.14)	.11	(7.31)**	.15	(19.80)***
Encounter Characteristics:										
Office Visit	---		---		---		---		---	
Professional Referral	-.03	(.52)	.37	(5.84)*	.24	(1.67)	-.22	(1.33)	-.11	(.42)
Number of Visits	-.004	(2.15)	-.01	(.74)	.01	(.65)	-.001	(.003)	-.000	(.001)
Joint F-statistics, specialty dummies removed	2.03		1.28		7.01***		2.03		.74	
F-statistic	1.59		1.28		2.67**		1.90*		4.70***	
Adjusted R^2	.02		.01		.06		.03		.11	
Mean of Dep. Var.	.01		.18		.34		.66		.25	

---

*p<.05, **p<.01, ***p<.001

TABLE IV-11-B (cont.)

Independent Variables	Referral	
	Coeff	(F)
Constant	.07	
Physician Specialty:		
Family Practice	.06	(1.35)
Pediatrics	.05	(.96)
Physician Characteristics:		
Age	-.001	(1.41)
Board Certification	.01	(.23)
Solo Practice	.01	(.30)
Patient Characteristics:		
Age	.000	(.03)
Sex (male=0, female=1)	-.05	(5.13)*
Multiple Conditions	-.01	(.20)
Severity-Complexity	.04	(6.53)
Urgency	-.03	(2.97)*
Encounter Characteristics:		
Office Visit	---	
Professional Referral	.23	(7.51)**
Number of Visits	.003	(.32)
Joint F-statistics, specialty dummies removed	.67	
F-statistic	2.18*	
Adjusted R^2	.04	
Mean of Dep. Var.	.05	

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*p<.05, **p<.01, ***p<.001

TABLE IV-12-A

REGRESSION COEFFICIENTS PREDICTING COMPONENTS OF CARE FOR COLDS AND URI (ICDA=460, 465), ALL ENCOUNTERS (N=3406)

Independent Variables	Chest X-ray		Laboratory Tests		Cultures		Systemic Drugs		Injection Other	
	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	.01		-.04		.10		.56		-.17	
Physician Specialty:										
Family Practice	-.04	(20.61)***	-.01	(.29)	-.04	(4.65)	-.06	(6.27)*	.09	(41.54)***
Pediatrics	-.04	(12.57)***	-.03	(2.23)	.05	(6.41)*	-.20	(54.17)***	.03	(3.55)
Physician Characteristics:										
Age	.000	(.06)	.001	(2.89)	-.000	(.62)	-.001	(.77)	.002	(13.18)***
Board Certification	-.01	(.70)	-.001	(.01)	.03	(5.32)*	.07	(17.56)***	-.05	(18.97)***
Solo Practice	-.01	(4.30)	-.03	(6.35)*	.02	(2.59)	-.01	(.37)	.03	(6.49)*
Patient Characteristics:										
Age	.000	(33.86)***	.000	(2.34)	-.001	(8.61)**	-.000	(.07)	.001	(20.86)***
Sex (male=0, female=1)	-.004	(.36)	.01	(.86)	.01	(.22)	.002	(.03)	-.002	(.07)
Multiple Conditions	-.01	(1.50)	.04	(7.55)**	-.01	(.47)	.06	(9.80)**	-.03	(4.72)*
Severity-Complexity	.03	(47.11)***	.05	(37.56)***	.01	(1.36)	.02	(2.66)	.004	(.35)
Urgency	.01	(8.16)**	.03	(14.26)***	.03	(14.78)***	.05	(18.93)***	.03	(25.02)***
Encounter Characteristics:										
Office Visit	-.05	(21.21)***	-.05	(6.43)*	-.04	(4.15)*	.10	(15.00)***	.03	(4.25)*
Professional Referral	.08	(12.96)***	-.02	(.19)	.02	(.27)	-.08	(2.00)	-.06	(3.11)
Number of Visits	.003	(5.07)*	.002	(457)	-.01	(4.69)*	-.01	(11.25)**	.01	(13.64)***
Joint F-statistics, specialty dummies removed	10.14***		1.39		18.95***		34.55***		28.06***	
F-statistic	18.69***		10.07***		9.04***		13.56***		16.85***	
Adjusted R^2	.06		.03		.03		.05		.06	
Mean of Dep. Var.	.03		.11		.14		.71		.09	

---

*p<.05, **p<.01, ***p<.001

TABLE IV-12-A (cont.)

	Referral	
Independent Variables	Coeff	(F)
Constant	.06	
Physician Specialty:		
Family Practice	.003	(.22)
Pediatrics	-.01	(.40)
Physician Characteristics:		
Age	.000	(.74)
Board Certification	-.004	(.50)
Solo Practice	.000	(.01)
Patient Characteristics:		
Age	-.000	(.01)
Sex (male=0, female=1)	-.004	(.70)
Multiple Conditions	.01	(2.80)
Severity-Complexity	.01	(4.83)*
Urgency	-.002	(.50)
Encounter Characteristics:		
Office Visit	-.07	(77.61)***
Professional Referral	.08	(21.70)***
Number of Visits	.01	(27.84)***
Joint F-statistics, specialty dummies removed	1.05	
F-statistic	12.19***	
Adjusted R^2	.04	
Mean of Dep. Var.	.02	

---

*p<.05, **p<.01, ***p<.001

TABLE IV-12-B

REGRESSION COEFFICIENTS PREDICTING COMPONENTS OF CARE FOR COLDS AND URI (ICDA=460, 465), FOLLOWUP VISITS IN OFFICE (N=368)

	Chest X-ray		Laboratory Tests		Cultures		Systemic Drugs		Injection Other	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	-.09		.58		.14		.63		-.25	
Physician Specialty:										
Family Practice	-.05	(2.71)	-.08	(2.23)	-.04	(.92)	-.16	(4.67)*	.16	(8.69)**
Pediatrics	-.04	(1.04)	-.13	(4.25)*	.01	(.04)	-.08	(.86)	.09	(1.91)
Physician Characteristics:										
Age	.001	(.22)	-.001	(.35)	-.001	(.43)	-.06	(4.61)*	.000	(.04)
Board Certification	.01	(.33)	-.06	(1.84)	.03	(1.35)	.09	(2.38)	-.01	(.04)
Solo Practice	-.03	(1.61)	.02	(.34)	.02	(.66)	.01	(.03)	.11	(6.64)*
Patient Characteristics:										
Age	.002	(10.55)**	.001	(1.32)	-.001	(1.46)	.001	(.45)	.002	(4.79)*
Sex (male-0, female=1)	-.04	(3.83)	.02	(.26)	.01	(.26)	.03	(.25)	-.02	(.29)
Multiple Conditions	-.03	(1.71)	-.04	(.76)	.01	(.17)	.05	(.75)	-.05	(1.05)
Severity-Complexity	.05	(8.69)**	.10	(12.84)***	.005	(.06)	.09	(6.01)*	-.02	(.40)
Urgency	.03	(2.86)	.003	(.01)	-.02	(.90)	.05	(1.97)	.10	(14.58)***
Encounter Characteristics:										
Office Visit	---		---		---		---		---	
Professional Referral	-.04	(.05)	-.17	(.42)	-.11	(.40)	-.71	(4.01)*	-.06	(.05)
Number of Visits	.001	(.19)	-.004	(1.41)	-.002	(.84)	-.01	(1.19)	.01	(2.18)
Joint F-statistics, specialty dummies removed	1.36		2.14		1.06		2.47		4.60*	
F-statistic	3.78***		2.39**		1.06		2.58**		3.94**	
Adjusted R^2	.08		.04		.00		.05		.09	
Mean of Dep. Var.	.05		.15		.06		.62		.18	

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*p<.05, **p<.01, ***p<.001

TABLE IV-12-B (cont.)

	Referral	
Independent Variables	Coeff	(F)
Constant	-.04	
Physician Specialty:		
Family Practice	.004	(.02)
Pediatrics	-.02	(.71)
Physician Characteristics:		
Age	.001	(1.57)
Board Certification	.01	(.20)
Solo Practice	-.03	(3.72)
Patient Characteristics:		
Age	-.000	(.70)
Sex (male=0, female=1)	-.005	(.09)
Multiple Conditions	.02	(.76)
Severity-Complexity	-.000	(.001)
Urgency	.01	(.24)
Encounter Characteristics:		
Office Visit	---	
Professional Referral	-.01	(.01)
Number of Visits	.01	(18.10)***
Joint F-statistics, specialty dummies removed	.79	
F-statistic	2.20*	
Adjusted R^2	.04	
Mean of Dep. Var.	.03	

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*p<.05, **p<.01, ***p<.001

TABLE IV-13-A

REGRESSION COEFFICENTS PREDICTING COMPONENTS OF CARE FOR LOW BACK PAIN (ICDA=353, 725.1, 722, 728.5-728.9, 846, 847.8, 847.9), ALL VISITS (N=1961)

	X-ray (non chest)				Counseling			
	A		B		A		B	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	-.09		-.09		.40		.37	
Physician Specialty:								
Family Practice	-.08	(6.68)*	---		-.01	(.04)	---	
Orthopedic Surgeon	.05	(3.28)	---		-.04	(2.11)	---	
Physician Characteristics:								
Age	.002	(4.40)*	-.002	(4.84)*	-.003	(8.70)**	-.003	(8.42)**
Board Certification	.003	(.02)	.01	(.31)	.03	(1.28)	.02	(.79)
Solo Practice	-.02	(.87)	-.02	(.70)	-.001	(.001)	-.004	(.03)
Patient Characteristics:								
Age	-.000	(.56)	-.001	(.72)	-.000	(.24)	-.000	(.10)
Sex (male=0, female=1)	-.05	(6.24)*	-.05	(6.57)*	-.002	(.01)	-.000	(.000)
Multiple Conditions	-.04	(2.97)	-.05	(4.50)*	.04	(2.43)	.05	(3.39)
Severity-Complexity	.10	(57.14)***	.11	(66.95)***	.01	(.33)	.01	(.14)
Urgency	.04	(10.27)**	.03	(5.58)*	-.001	(.01)	.002	(.02)
Encounter Characteristics:								
Office Visit	.11	(23.84)***	.10	(20.60)***	.11	(21.54)***	.11	(22.15)***
Professional Referral	-.02	(.41)	.03	(1.70)	-.06	(4.66)*	-.07	(8.91)**
Number of Visits	-.001	(19.20)***	-.01	(15.23)***	-.001	(.94)	-.001	(1.47)
Joint F-statistics, specialty dummies removed	13.09***		---		1.49		---	
F-statistic	13.85***		13.81***		3.89***		4.32***	
Adjusted R^2	.08		.07		.02		.02	
Mean of Dep. Var.	.30		.30		.31		.31	

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*p<.05, **p<.01, ***p<.001

TABLE IV-13-A (cont.)

Hospitalization

	A		B	
Independent Variables	Coeff	(F)	Coeff	(F)
Constant	.42		.43	
Physician Specialty:				
Family Practice	-.02	(.63)	---	
Orthopedic Surgeon	.02	(1.56)	---	
Physician Characteristics:				
Age	-.000	(.02)	-.000	(.02)
Board Certification	.04	(6.58)*	.05	(8.13)**
Solo Practice	-.003	(.03)	-.001	(.01)
Patient Characteristics:				
Age	.001	(1.71)	.001	(1.46)
Sex (male=0, female=1)	.02	(3.29)	.02	(3.08)
Multiple Conditions	.05	(9.16)**	.05	(7.97)**
Severity-Complexity	.02	(3.92)*	.02	(5.26)*
Urgency	.05	(40.49)***	.05	(36.59)***
Encounter Characteristics:				
Office Visit	-.65	(1891.40)***	0.65	(1909.54)***
Professional Referral	.04	(5.16)*	.05	(11.65)**
Number of Visits	.000	(.20)	.000	(.52)
Joint F-statistics, specialty dummies removed	2.83		---	
F-statistic	195.44***		230.02***	
Adjusted R^2	.56		.56	
Mean of Dep. Var.	.28		.28	

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*p<.05, **p<.01, ***p<.001

TABLE IV-13-B

REGRESSION COEFFICIENTS PREDICITING COMPONENTS OF CARE FOR LOW BACK PAIN (ICDA=353, 725.1, 722, 728.5-728.9, 846, 847.8, 847.9), FOLLOWUP VISITS IN OFFICE (N=638)

	X-ray (non chest)				Counseling			
	A		B		A		B	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	-.35		-.15		.60		.55	
Physician Specialty:								
Family Practice	-.15	(5.92)*	---		-.06	(.81)	---	
Orthopedic Surgeon	-.05	(.65)	---		-.03	(.25)	---	
Physician Characteristics:								
Age	.001	(.49)	.002	(1.06)	-.004	(5.15)*	-.004	(4.76)*
Board Certification	-.01	(.09)	-.006	(.02)	.04	(.51)	.04	(.53)
Solo Practice	-.04	(1.40)	-.04	(1.32)	.001	(.000)	.001	(.001)
Patient Characteristics:								
Age	.02	(.93)	.001	(1.40)	-.001	(.99)	-.001	(.82)
Sex (male=0, female=1)	.001	(.000)	.01	(.06)	-.04	(1.17)	-.04	(1.01)
Multiple Conditions	-.03	(.67)	-.02	(.35)	.04	(.83)	.05	(1.07)
Severity-Complexity	.09	(17.82)***	.10	(19.79)***	.02	(.42)	.02	(.51)
Urgency	.04	(4.41)*	.04	(2.93)	.004	(.03)	.001	(.003)
Encounter Characteristics:								
Office Visit	---		---		---		---	
Professional Referral	-.07	(2.41)	.10	(5.70)*	-.03	(.40)	-.02	(.27)
Number of Visits	-.004	(3.84)	-.003	(3.19)	-.001	(.12)	-.001	(.10)
Joint F-statistics, specialty dummies removed	4.01		---		0.43		---	
F-statistic	4.09***		4.06***		.82		.90	
Adjusted R^2	.05		.05		.000		.000	
Mean of Dep. Var.	.25		.25		.36		.36	

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*p<.05; **p<.01; ***p<.001

TABLE IV-13-B (cont.)

Hospitalization

	A		B	
Independent Variables	Coeff	(F)	Coeff	(F)
Constant	.005		-.001	
Physician Specialty:				
Family Practice	-.02	(.53)	---	
Orthopedic Surgeon	.02	(.54)	---	
Physician Characteristics:				
Age	-.000	(.06)	-.000	(.003)
Board Certification	-.01	(.26)	-.002	(.02)
Solo Practice	-.02	(1.40)	-.02	(1.32)
Patient Characteristics:				
Age	-.000	(.16)	-.001	(.17)
Sex (male=0, female=1)	.001	(.01)	.002	(.02)
Multiple Conditions	.02	(1.15)	.02	(1.10)
Severity-Complexity	-.000	(.002)	.001	(.02)
Urgency	.02	(6.79)**	.02	(5.32)
Encounter Characteristics:				
Office Visit	---		---	
Professional Referral	-.01	(.12)	.01	(.16)
Number of Visits	-.001	(2.26)	-.001	(1.74)
Joint F-statistics, specialty dummies removed	2.01		---	
F-statistic	1.21		1.05	
Adjusted R^2	.004		.001	
Mean of Dep. Var.	.03		.03	

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*p<.05; **p<.01; ***p<.001

TABLE IV-14-A

REGRESSION COEFFICIENTS PREDICTING COMPONENTS OF CARE FOR PNEUMONIA (ICDA=480-486), ALL VISITS (N=3086)

	Chest X-ray		Laboratory Tests		Cultures		Systemic Drugs		Injection Other	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	.06		-.10		.04		.41		-.27	
Physician Specialty:										
Family Practice	-.09	(10.85)**	-.02	(.39)	-.13	(35.02)***	-.15	(25.02)***	.02	(.90)
Pediatrics	-.32	(89.44)***	-.05	(2.57)	.05	(3.03)	-.09	(5.49)*	.05	(4.95)*
Physician Characteristics:										
Age	.000	(.08)	.001	(1.59)	-.001	(1.37)	-.001	(.41)	.002	(13.60)***
Board Certification	-.04	(5.44)*	-.04	(7.93)**	-.001	(.002)	.01	(.45)	-.06	(24.45)***
Solo Practice	-.04	(4.87)*	-.05	(8.35)**	.02	(1.02)	.002	(.01)	.03	(6.70)*
Patient Characteristics:										
Age	-.001	(4.05)*	-.000	(.70)	-.001	(3.02)	-.003	(.28)	.001	(3.88)*
Sex (male=0, female=1)	-.01	(.84)	-.01	(.44)	.02	(1.95)	-.02	(1.72)	-.01	(1.13)
Multiple Conditions	-.07	(16.85)***	-.02	(2.22)	.03	(5.41)*	.04	(3.32)	-.02	(2.34)
Severity-Complexity	.11	(65.90)***	.10	(58.45)***	.04	(13.88)***	.03	(3.52)	.04	(16.90)***
Urgency	.11	(121.24)***	.08	(73.22)***	.05	(36.12)***	.08	(48.23)***	.07	(85.09)***
Encounter Characteristics:										
Office Visit	-.01	(.30)	-.08	(18.72)***	-.06	(13.93)***	.09	(16.14)***	-.01	(.32)
Professional Referral	-.01	(.07)	.02	(.91)	.05	(4.40)**	-.09	(9.02)**	.04	(3.91)
Number of Visits	-.002	(1.07)	-.005	(8.24)**	-.004	(7.11)**	-.01	(13.35)***	.001	(1.01)
Joint F-statistics, specialty dummies removed	47.64***		1.34		19.31***		12.66***		2.54	
F-statistic	66.47***		33.47***		17.64***		10.84***		21.82***	
Adjusted R^2	.22		.12		.07		.04		.08	
Mean of Dep. Var.	.29		.21		.15		.62		.10	

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*p<.05, **p<.01, ***p<.001

TABLE IV-14-A (cont.)

	Referral	
Independent Variables	Coeff	(F)
Constant	-.02	
Physician Specialty:		
Family Practice	-.01	(.59)
Pediatrics	-.03	(2.86)
Physician Characteristics:		
Age	-.001	(3.26)
Board Certification	-.02	(2.55)
Solo Practice	.02	(2.35)
Patient Characteristics:		
Age	-.000	(2.64)
Sex (male=0, female=1)	-.005	(.34)
Multiple Conditions	.03	(12.41)***
Severity-Complexity	.01	(1.33)
Urgency	.04	(43.49)***
Encounter Characteristics:		
Office Visit	-.02	(2.22)
Professional Referral	.15	(101.58)***
Number of Visits	.005	(20.07)***
Joint F-statistics, specialty dummies removed	1.45	
F-statistic	29.47***	
Adjusted R^2	.11	
Mean of Dep. Var.	.06	

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*p<.05, **p<.01, ***p<.001

TABLE IV-14-B

REGRESSION COEFFICIENTS PREDICTING COMPONENTS OF CARE FOR PNEUMONIA (ICDA-480-486), FIRST VISIT (N-3086)

Independent Variables	Chest X-ray		Laboratory Tests		Cultures		Systemic Drugs		Injection Other	
	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	-.10		-.56		-.25		.17		-.31	
Physician Specialty:										
Family Practice	-.28	(9.69)**	-.18	(4.33)*	-.01	(5.90)*	-.21	(5.22)*	-.17	(5.63)*
Pediatrics	-.16	(1.89)	-.06	(.29)	-.02	(.04)	-.27	(5.51)*	-.08	(.82)
Physician Characteristics:										
Age	-.001	(.15)	.01	(6.83)*	-.003	(.67)	.001	(.17)	-.002	(.41)
Board Certification	.02	(.05)	-.13	(3.95)*	.01	(.03)	-.02	(.11)	-.02	(.23)
Solo Practice	-.04	(.28)	-.15	(4.08)*	-.05	(.41)	-.04	(.24)	.06	(1.02)
Patient Characteristics:										
Age	-.001	(.82)	-.001	(.82)	-.001	(.41)	-.000	(.08)	-.000	(.13)
Sex (male=0, female=1)	.02	(.11)	-.04	(.51)	.10	(3.14)	.000	(.000)	.04	(.65)
Multiple Conditions	-.02	(.10)	-.01	(04)	.03	(.29)	.03	(.26)	.02	(.18)
Severity-Complexity	.20	(13.29)***	.18	(11.17)**	.15	(7.88)**	.08	(2.14)	.01	(.10)
Urgency	.11	(7.50)**	.02	(9.93)**	.10	(7.23)**	.10	(6.05)*	.18	(33.69)***
Encounter Characteristics:										
Office Visit	---		---		---		---		---	
Professional Referral	-.04	(.46)	.004	(.003)	.08	(1.87)	-.04	(.44)	-.01	(.07)
Number of Visits	---		---		---		---		---	
Joint F-statistics, specialty dummies removed	4.88**		2.19		3.21*		3.94*		2.81	
F-statistic	5.54***		6.32***		5.59***		3.35***		6.65***	
Adjusted R^2	.16		.19		.17		.09		.20	
Mean of Dep. Var.	.53		.41		.33		.61		.19	

---

*p<.05; **p<.01; ***p<.001

	Referral	
Independent Variables	Coeff	(F)
Constant	.03	
Physician Specialty:		
Family Practice	-.12	(2.76)
Pediatrics	-.06	(.45)
Physician Characteristics:		
Age	-.004	(2.77)
Board Certification	-.005	(.01)
Solo Practice	.07	(1.31)
Patient Characteristics:		
Age	-.000	(.04)
Sex (male=0, female=1)	.04	(.83)
Multiple Conditions	.08	(2.74)
Severity-Complexity	-.01	(.06)
Urgency	.09	(7.84)**
Encounter Characteristics:		
Office Visit	---	
Professional Referral	.13	(6.19)*
Number of Visits	---	
Joint F-statistics, specialty dummies removed	1.38	
F-statistic	4.20***	
Adjusted R^2	.12	
Mean of Dep. Var.	.17	

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*p<.05; **p<.01; ***p<.001

APPENDIX V

SUPPLEMENTARY TABLES TO CHAPTER V

NOTE ON TABLES V-1-A THROUGH V-12-D

Tables V-1-A...I through V-7-A...I correspond to Tables V-1 through V-7 for each of the tracers in Chapter V. The A and B tables present multiple regression coefficients for the tracer while the C through I tables show geographic cross-tabulations for the tracer for each component of care. Tables V-12-A through V-12-D correspond to Table V-12 in the chapter, examining the impact of designation status on components of care.

Table V-1-A

COEFFICIENTS FROM REGRESSION EQUATIONS PREDICTING COMPONENTS OF CARE FOR ESSENTIAL BENIGN HYPERTENSION (ICDA=401), INCLUDING GEOGRAPHIC VARIABLES, TOTAL VISITS (N=3985)

	Chest X-ray		Laboratory Tests		Counseling		Systemic Drugs		Electro-Cardiogram	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	.09		.22		.39		.21		-.06	
Physician Specialty:										
Family Practice	-.10	(78.10)***	-.07	(19.50)***	-.03	(2.90)	-.03	(3.48)	-.12	(94.95)***
Cardiology	.01	(.22)	-.03	(2.40)	.01	(.48)	-.16	(43.74)***	.05	(8.00)**
Physician Characteristics:										
Age	-.001	(4.18)*	-.001	(1.46)	-.004	(31.15)***	.001	(.64)	-.001	(3.62)
Board Certification	-.01	(.35)	-.02	(1.22)	-.07	(27.48)***	-.04	(6.28)*	-.003	(.07)
Solo Practice	-.01	(.65)	-.004	(.05)	.02	(1.08)	-.001	(.002)	.001	(.02)
Patient Characteristics:										
Age	-.000	(.84)	-.001	(2.52)	-.002	(26.19)***	.001	(5.12)*	-.000	(1.05)
Sex (male=0, female=1)	-.02	(5.43)*	-.02	(2.13)	-.01	(.23)	.04	(6.87)**	-.03	(5.40)*
Multiple Conditions	.01	(.82)	.08	(30.02)***	.10	(54.40)***	.02	(1.99)	.01	(.9)
Severity-Complexity	.06	(73.94)***	.09	(83.60)***	.04	(17.51)***	.02	(5.81)*	.07	(93.42)***
Urgency	.01	(2.07)	.004	(.16)	.02	(6.27)*	.04	(14.79)***	.01	(1.68)
Encounter Characteristics:										
Office Visit	-.03	(3.61)	-.04	(4.33)*	.05	(6.78)**	.18	(61.90)***	.01	(.34)
Professional Referral	.01	(.84)	.06	(6.59)**	.03	(2.46)	-.04	(3.05)	.04	(6.21)*
Number of Visits	-.001	(17.86)***	-.001	(2.88)	-.001	(1.17)	.003	(31.39)***	-.001	(12.23)***
Geographical Characteristics:										
Northeast Region	-.001	(.01)	.02	(1.21)	.05	(5.40)*	.07	(8.57)**	.02	(1.67)
North Central Region	.03	(4.35)*	.03	(2.00)	-.02	(1.59)	.06	(8.02)**	.03	(3.73)
South Region	.02	(1.75)	.02	(.80)	-.03	(1.91)	.09	(15.77)***	.03	(2.64)
SMSA Status	.03	(4.78)*	-.005	(.07)	-.01	(.42)	.01	(.26)	.03	(2.99)
Joint F-statistics, geographic dummies removed	2.57*		.57		4.67***		4.22**		6.54***	
F-statistic	18.10***		14.32***		15.46***		14.31***		21.92***	
Adjusted R^2	.07		.05		.06		.05		.08	
Mean of Dep. Var.	.11		.28		.23		.64		.14	

*p<.05; **p<.01; ***p<.001

Table V-1-A (continued)

Independent Variables	Referral Coeff	 (F)
Constant	.10	
Physician Specialty:		
Family Practice	-.01	(.94)
Cardiology	.07	(41.12)***
Physician characteristics:		
Age	.001	(4.39)*
Board Certification	.004	(.23)
Solo Practice	-.02	(4.24)
Patient Characteristics:		
Age	-.001	(8.22)**
Sex (male=0, female=1)	-.01	(.79)
Multiple Conditions	.05	(42.49)***
Severity-Complexity	.01	(6.57)*
Urgency	.01	(3.16)
Encounter Characteristics:		
Office Visit	-.13	(133.54)***
Professional Referral	.05	(19.20)***
Number of Visits	-.001	(7.62)**
Geographic Characteristics:		
Northeast Region	-.003	(.08)
North Central Region	.02	(5.20)*
South Region	-.01	(1.25)
SMSA Status	.01	(.49)
Joint F-statistics, geographic dummies removed	3.79**	
F-statistics	28.00***	
Adjusted R^2	.10	
Mean of Dep. Var.	.06	

*p<.05; **p<.01; ***p<.001

Table V-1-B

COEFFICIENTS FROM REGRESSION EQUATIONS PREDICTING COMPONENTS OF CARE FOR ESSENTIAL BENIGN HYPERTENSION (ICDA=401), INCLUDING GEOGRAPHIC VARIABLES, FIRST OFFICE VISIT (N=838)

	Chest X-ray		Laboratory Tests		Counseling		Systemic Drugs		Electro-Cardiogram	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	.27		.50		.57		.09		.26	
Physician Specialty:										
Family Practice	-.14	(26.33)***	-.09	(6.43)*	.02	(.38)	.04	(1.25	-.18	(36.86)***
Cardiology	.04	(.83)	-.04	(.68)	.01	(.01)	-.10	(3.11)	.05	(1.48)
Physician Characteristics:										
Age	-.003	(6.34)*	-.003	(2.61)	-.003	(3.59)	-.004	(5.08)*	-.002	(1.53)
Board Certification	.05	(4.18)*	.03	(.87)	-.07	(5.37)*	.05	(1.63)	.03	(1.40)
Solo Practice	-.03	(1.65)	-.004	(.02)	.01	(.12)	-.06	(2.37)	-.01	(.16)
Patient Characteristics:										
Age	-.001	(5.36)*	-.003	(9.35)**	-.003	(12.21)***	.003	(5.69)*	-.001	(2.72)
Sex (male=0, female=1)	-.03	(1.65)	-.01	(.04)	-.04	(1.82)	.06	(2.78)	-.05	(3.52)
Multiple Conditions	.01	(.17)	.06	(2,94)	.09	(10.02)**	.04	(1.39)	.01	(.30)
Severity-Complexity	.07	(18.43)***	.10	(19.36)***	.03	(2.19)	-.001	(.01)	.10	(28.94)***
Urgency	.01	(.19)	-.000	(.62)	.005	(.08)	.06	(8.63)**	.004	(.05)
Encounter Characteristics:										
Office Visit	---		---		---		---		---	
Professional Referral	.02	(.24)	.02	(.14)	.01	(.07)	.05	(.78)	.05	(.96)
Number of Visits	---		---		---		---		---	
Geographic Characteristics:										
Northeast Region	-.003	(.01)	-.01	(.05)	.05	(1.18)	-.01	(.07)	-.04	(.83)
North Central Region	-.05	(1.82)	-.05	(1.00)	-.12	(8.60)**	-.04	(.63)	-.08	(4.70)*
South Region	-.01	(.06)	-.03	(.50)	-.13	(10.07)**	.01	(.01)	-.05	(1.84)
SMSA Status	.04	(1.97)	-.01	(.06)	-.06	(2.89)	-.08	(3.14)	.004	(.31)
Joint F-statistics, geographic dummies removed	1.20		.50		5.86***		1.15		1.23	
F-statistic	7.23***		3.98***		4.80***		3.11***		8.67***	
Adjusted R^2	.10		.05		.06		.04		.12	
Mean of Dep. Var.	.16		.31		.23		.55		.20	

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*p<.05; **p<.01; ***p<.001

Table V-1-8 (continued)

	Referral
Independent Variables	Coeff (F)
Constant	-.07
Physician Specialty:	
Family Practice	-.000 (.000)
Cardiology	.19 (48.40)***
Physician Characteristics:	
Age	.001 (3.13)
Board Certification	-.01 (.53)
Solo Practice	-.05 (8.27)**
Patient Characteristics:	
Age	-.001 (.92)
Sex (male=0, female=1)	-.01 (.28)
Multiple Conditions	.03 (3.43)
Severity-Complexity	-.000 (.000)
Urgency	.02 (3.21)
Encounter Characteristics:	
Office Visit	---
Professional Referral	.13 (19.63)***
Number of Visits	---
Geographic Characteristics:	
Northeast Region	.04 (2.72)
North Central Region	.09 (14.09)***
South Region	.04 (2.95)
SMSA Status	-.01 (.31)
Joint F-statistics, geographic dummies removed	3.81**
F-statistic	8.56***
Adjusted R^2	.12
Mean of Dep. Var.	.07

*p<.05; **p<.01; ***p<.001

TABLE V-1-C

GEOGRAPHICAL BREAKDOWNS
CONDITION: ESSENTIAL BENIGN HYPERTENSION (ICDA = 401)
COMPONENT OF CARE: CHEST X-RAY

	Family Practice			Cardiology			Internal Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	3.0	(771)	(1527)	13.8	(337)	(655)	13.1	(1043)	(2397)
SMSA	3.2	(545)	(1019)	14.6	(301)	(597)	13.9	(887)	(2019)
Non-SMSA	2.5	(226)	(508)	6.6	(35)	(58)	8.8	(156)	(378)
Northeast	2.8	(203)	(290)	12.1	(130)	(211)	12.1	(273)	(545)
SMSA	2.1	(178)	(255)	12.7	(118)	(193)	12.1	(250)	(482)
Non-SMSA	8.0	(25)	(35)	5.9	(12)	(18)	11.7	(23)	(63)
North Central	3.6	(207)	(489)	21.0	(64)	(142)	10.3	(323)	(766)
SMSA	5.3	(114)	(256)	20.0	(63)	(139)	11.4	(261)	(614)
Non-SMSA	1.5	(93)	(233)	58.8	(2)	(3)	6.1	(62)	(152)
South	3.5	(266)	(512)	12.4	(71)	(154)	15.3	(229)	(507)
SMSA	3.9	(176)	(328)	12.5	(70)	(153)	17.1	(178)	(394)
Non-SMSA	2.6	(90)	(184)	.0	(0)	(1)	9.0	(51)	(113)
West	.7	(95)	(236)	11.6	(71)	(148)	16.3	(218)	(579)
SMSA	.9	(77)	(180)	15.2	(50)	(112)	16.7	(198)	(529)
Non-SMSA	.0	(18)	(56)	2.8	(21)	(36)	12.8	(20)	(50)

TABLE V -1-D

GEOGRAPHICAL BREAKDOWNS
CONDITION; ESSENTIAL BENIGN HYPERTENSION (ICDA = 401)
COMPONENT OF CARE: LABORATORY TESTS

	Family Practice			Cardiology			Internal Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	22.6	(771)	(1527)	29.7	(337)	(655)	28.6	(1043)	(2397)
SMSA	23.4	(545)	(1019)	31.7	(301)	(597)	29.8	(887)	(2019)
Non-SMSA	20.7	(226)	(508)	12.0	(35)	(58)	21.7	(156)	(378)
Northeast	27.6	(203)	(209)	27.0	(130)	(211)	27.6	(273)	(545)
SMSA	28.5	(178)	(255)	29.1	(118)	(193)	28.0	(250)	(482)
Non-SMSA	21.1	(25)	(35)	5.9	(12)	(18)	23.2	(23)	(63)
North Central	21.7	(207)	(489)	35.5	(64)	(142)	25.0	(323)	(766)
SMSA	23.3	(114)	(256)	35.9	(63)	(139)	26.2	(261)	(614)
Non-SMSA	19.8	(93)	(233)	21.2	(2)	(3)	19.9	(62)	(152)
South	23.3	(266)	(512)	38.3	(71)	(154)	31.0	(229)	(507)
SMSA	24.4	(176)	(328)	38.5	(70)	(153)	32.8	(178)	(394)
Non-SMSA	21.2	(90)	(184)	.0	(0)	(1)	24.9	(51)	(113)
West	11.9	(95)	(236)	20.8	(71)	(148)	32.7	(218)	(579)
SMSA	9.7	(77)	(180)	23.1	(50)	(112)	34.2	(198)	(529)
Non-SMSA	21.4	(18)	(56)	15.1	(21)	(36)	17.7	(20)	(50)

TABLE V -1-E

GEOGRAPHICAL BREAKDOWN
CONDITION: ESSENTIAL BENIGN HYPERTENSION (ICDA = 401)
COMPONENT OF CARE: SYSTEMIC DRUGS

	Family Practice			Cardiology			Internal Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	66.2	(771)	(1527)	52.3	(336)	(655)	68.1	(1043)	(2397)
SMSA	65.4	(545)	(1019)	54.3	(301)	(597)	67.9	(887)	(2019)
Non-SMSA	68.3	(226)	(508)	35.0	(35)	(58)	70.0	(156)	(378)
Northeast	76.7	(203)	(290)	62.2	(130)	(211)	64.9	(273)	(545)
SMSA	74.3	(178)	(255)	62.9	(118)	(193)	64.9	(250)	(482)
Non-SMSA	93.9	(25)	(35)	56.2	(12)	(18)	65.3	(23)	(63)
North Central	57.1	(207)	(489)	45.1	(64)	(142)	77.6	(323)	(766)
SMSA	54.6	(114)	(256)	44.7	(63)	(139)	76.1	(261)	(614)
Non-SMSA	60.1	(93)	(233)	58.8	(2)	(3)	84.0	(62)	(152)
South	69.7	(266)	(512)	54.5	(71)	(154)	63.8	(229)	(507)
SMSA	69.8	(176)	(328)	54.3	(70)	(153)	65.0	(178)	(394)
Non-SMSA	69.5	(90)	(184)	100.0	(0)	(1)	59.9	(51)	(113)
West	54.2	(95)	(236)	38.4	(71)	(148)	62.8	(218)	(579)
SMSA	50.8	(77)	(180)	46.2	(50)	(112)	63.5	(198)	(529)
Non-SMSA	68.4	(18)	(56)	19.4	(21)	(36)	55.9	(20)	(50)

TABLE V-1-F

GEOGRAPHICAL BREAKDOWN
CONDITION: ESSENTIAL BENIGN HYPERTENSION (ICDA = 401)
COMPONENT OF CARE: COUNSELING

	Family Practice			Cardiology			Internal Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	20.5	(771)	(1527)	30.7	(337)	(655)	22.7	(1043)	(2397)
SMSA	20.6	(545)	(1019)	32.6	(301)	(597)	23.1	(887)	(2019)
Non-SMSA	20.3	(226)	(508)	14.9	(35)	(58)	20.7	(156)	(378)
Northeast	25.7	(203)	(290)	40.8	(130)	(211)	27.5	(273)	(545)
SMSA	25.1	(178)	(255)	43.8	(118)	(193)	25.9	(250)	(482)
Non-SMSA	30.5	(25)	(35)	11.6	(12)	(18)	44.4	(23)	(63)
North Central	17.8	(207)	(489)	29.2	(64)	(142)	14.6	(323)	(766)
SMSA	17.0	(114)	(256)	28.4	(63)	(139)	15.1	(261)	(614)
Non-SMSA	18.7	(93)	(233)	58.8	(2)	(3)	12.8	(62)	(152)
South	19.0	(266)	(512)	26.8	(71)	(154)	23.9	(229)	(507)
SMSA	19.3	(176)	(328)	26.4	(70)	(153)	24.9	(178)	(394)
Non-SMSA	18.3	(90)	(184)	100.0	(0)	(1)	20.7	(51)	(113)
West	19.6	(95)	(236)	17.6	(71)	(148)	27.4	(218)	(579)
SMSA	18.6	(77)	(180)	20.0	(50)	(112)	28.4	(198)	(529)
Non-SMSA	23.9	(18)	(56)	11.7	(21)	(36)	17.6	(20)	(50)

TABLE V-1-G

GEOGRAPHICAL BREAKDOWN
CONDITION: ESSENTIAL BENIGN HYPERTENSION ICDA = 401)
COMPONENT OF CARE: ELECTROCARDIOGRAM

	Family Practice			Cardiology			Internal Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	4.8	(771)	(1527)	23.1	(336)	(655)	16.3	(1043)	(2397)
SMSA	5.3	(545)	(1019)	24.1	(301)	(597)	17.2	(887)	(2019)
Non-SMSA	3.6	(226)	(508)	14.4	(35)	(58)	11.4	(156)	(378)
Northeast	5.8	(203)	(290)	24.8	(130)	(211)	15.8	(273)	(545)
SMSA	5.4	(178)	(255)	24.2	(118)	(193)	16.0	(250)	(482)
Non-SMSA	8.0	(25)	(35)	31.2	(12)	(18)	14.0	(23)	(63)
North Central	4.9	(207)	(489)	25.4	(64)	(142)	14.0	(323)	(766)
SMSA	6.5	(114)	(256)	26.0	(63)	(139)	15.0	(261)	(614)
Non-SMSA	3.0	(93)	(233)	.0	(2)	(3)	9.9	(62)	(152)
South	5.3	(266)	(512)	20.4	(71)	(154)	19.0	(229)	(507)
SMSA	6.1	(176)	(328)	20.5	(70)	(153)	20.6	(178)	(394)
Non-SMSA	3.7	(90)	(184)	.0	(0)	(1)	13.8	(51)	(113)
West	.9	(95)	(236)	20.4	(71)	(148)	17.5	(218)	(579)
SMSA	1.1	(77)	(180)	26.4	(50)	(112)	18.5	(198)	(529)
Non-SMSA	.0	(18)	(56)	6.0	(21)	(36)	7.3	(20)	(50)

TABLE V-1-H

GEOGRAPHICAL BREAKDOWN
CONDITION: ESSENTIAL BENIGN HYPERTENSION (ICDA = 401)
COMPONENT OF CARE: REFERRAL

	Family Practice			Cardiology			Internal Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	2.8	(735)	(1437)	13.5	(301)	(565)	5.8	(960)	(2191)
SMSA	3.3	(518)	(960)	14.0	(267)	(512)	5.8	(813)	(1830)
Non-SMSA	1.5	(217)	(477)	7.3	(33)	(53)	5.7	(147)	(361)
Northeast	3.0	(201)	(287)	9.1	(116)	(170)	4.8	(247)	(467)
SMSA	3.4	(176)	(252)	9.7	(105)	(156)	4.5	(227)	(408)
Non-SMSA	.0	(25)	(35)	3.2	(11)	(14)	8.1	(21)	(59)
North Central	3.8	(187)	(431)	28.3	(52)	(118)	4.4	(305)	(705)
SMSA	4.6	(101)	(221)	29.2	(50)	(115)	4.9	(244)	(559)
Non-SMSA	2.4	(86)	(210)	.0	(2)	(3)	2.6	(60)	(146)
South	2.8	(259)	(497)	10.1	(68)	(147)	7.7	(198)	(456)
SMSA	3.5	(171)	(320)	10.1	(68)	(146)	7.0	(151)	(348)
Non-SMSA	1.4	(88)	(177)	.0	(0)	(1)	9.8	(47)	(108)
West	.5	(88)	(222)	11.3	(65)	(130)	7.1	(210)	(563)
SMSA	.7	(70)	(167)	12.7	(44)	(95)	7.5	(191)	(515)
Non-SMSA	.0	(18)	(55)	10.2	(21)	(35)	3.0	(19)	(48)

TABLE V-1-I

GEOGRAPHICAL BREAKDOWN
CONDITION: ESSENTIAL BENIGN HYPERTENSION (ICDA = 401)
COMPONENT OF CARE: VISIT DURATION

	Family Practice			Cardiology			Internal Medicine		
	Minutes	n (w)	n	Minutes	n (w)	n	Minutes	n (w)	n
U.S. Total	11.1	(719)	(1385)	19.5	(316)	(600)	16.6	(987)	(2282)
SMSA	11.7	(506)	(917)	20.3	(285)	(553)	17.2	(836)	(1928)
Non-SMSA	9.7	(212)	(468)	12.4	(32)	(47)	13.6	(151)	(354)
Northeast	12.2	(200)	(282)	20.8	(126)	(200)	16.3	(258)	(518)
SMSA	11.8	(175)	(247)	21.4	(114)	(185)	16.2	(235)	(455)
Non-SMSA	15.2	(25)	(35)	14.7	(11)	(15)	16.8	(23)	(63)
North Central	11.0	(195)	(460)	20.6	(60)	(132)	15.2	(292)	(707)
SMSA	12.7	(108)	(240)	20.9	(58)	(129)	16.1	(232)	(564)
Non-SMSA	8.8	(87)	(220)	8.8	(2)	(3)	11.6	(60)	(143)
South	10.6	(238)	(432)	17.0	(68)	(146)	17.6	(220)	(483)
SMSA	11.5	(154)	(269)	17.0	(67)	(145)	18.5	(172)	(384)
Non-SMSA	9.1	(84)	(163)	15.0	(0)	(1)	14.4	(48)	(99)
West	10.3	(86)	(211)	18.5	(63)	(122)	18.1	(217)	(574)
SMSA	10.6	(70)	(161)	21.5	(44)	(94)	18.4	(197)	(525)
Non-SMSA	9.1	(16)	(50)	11.3	(18)	(28)	14.4	(20)	(49)

Table V-2-A

COEFFICIENTS FROM REGRESSION EQUATIONS PREDICTING COMPONENTS OF CARE FOR ISCHEMIC HEART DISEASE (ICDA-412, 413), INCLUDING GEOGRAPHIC VARIABLES, TOTAL VISITS (N=4608)

	Chest X-ray		Laboratory Tests		Counseling		Systemic Drugs		Electro-Cardiogram	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	-.17		.04		.11		.24		.02	
Physician Specialty:										
Family Practice	-.08	(19.35)***	-.10	(19.24)***	-.03	(2.82)	-.06	(7.60)**	-.15	(43.76)***
Cardiology	-.01	(.80)	-.11	(48.59)***	-.01	(.88)	-.23	(202.57)***	.02	(1.80)
Physician Characteristics:										
Age	.001	(5.29)*	.002	(8.22)**	-.001	(1.05)	.000	(.42)	.000	(.15)
Board Certification	-.01	(1.09)	-.07	(23.27)***	-.03	(7.28)**	-.11	(61.38)***	-.04	(9.03)**
Solo Practice	-.03	(5.73)*	-.01	(.20)	.005	(.13)	.02	(1.13)	-.01	(.81)
Patient Characteristics:										
Age	.000	(1.11)	-.001	(2.78)	-.001	(8.48)**	.001	(3.93)*	-.002	(12.05)***
Sex (male=0, female=1)	-.01	(1.28)	.02	(1.20)	-.001	(.02)	.03	(3.56)	-.02	(2.08)
Multiple Conditions	.01	(1.03)	.05	(11.66)***	.07	(27.65)***	.06	(16.81)***	-.01	(.25)
Severity-Complexity	.09	(143.73)***	.08	(85.04)***	.05	(41.39)***	.04	(17.21)***	.11	(149.32)***
Urgency	.03	(25.18)***	.03	(14.13)***	.01	(1.99)	.04	(20.78)***	.06	(44.49)***
Encounter Characteristics:										
Office Visits	-.02	(2.08)	-.02	(2.76)	.03	(5.87)*	.09	(32.32)***	.09	(32.65)***
Professional Referral	.03	(5.43)*	-.01	(.13)	.01	(.20)	-.57	(10.96)***	.03	(3.20)
Number of Visits	-.001	(7.42)**	.000	(.03)	-.000	(.85)	.11	(7.84)**	-.001	(6.58)**
Geographic Characteristics:										
Northeast Region	-.03	(2.86)	.03	(2.21)	.05	(6.40)*	.52	(5.66)*	.04	(2.89)
North Central Region	.01	(.71)	.03	(1.98)	.03	(2.50)	.34	(2.53)	.02	(.81)
South Region	.04	(5.43)*	.06	(14.27)***	.09	(22.85)***	.15	(51.98)***	.08	(12.90)***
SMSA Status	.03	(4.17)*	.05	(7.64)**	.05	(7.83)**	.06	(9.86)**	.07	(12.71)***
Joint F-statistics, geographic dummies removed	6.25***		5.69***		8.25***		19.23***		6.91***	
F-statistic	23.21***		17.52***		9.13***		35.68***		30.75***	
Adjusted R^2	.07		.06		.03		.11		.10	
Mean of Dep. Var.	.18		.33		.23		.54		.36	

*p<.05; **p<.01; ***p<.001

Table V-2-A (Continued

Independent Variables	Referral Coeff (F)
Constant	.08
Physician Specialty:	
Family Practice	.04 (5.13)*
Cardiology	.03 (7.33)**
Physician Characteristics:	
Age	.001 (1.76)
Board Certification	-.01 (.30)
Solo Practice	-.02 (3.86)*
Patient Characteristics:	
Age	-.001 (8.72)**
Sex (male=0, female=1)	-.03 (5.76)*
Multiple Conditions	.01 (1.65)
Severity-Complexity	.05 (45.29)***
Urgency	.001 (.02)
Encounter Characteristics:	
Office Visit	-.11 (85.23)***
Professional Referral	.17 (176.14)***
Number of Visits	-.001 (11.63)***
Geographic Characteristics:	
Northwest Region	.01 (.36)
North Central Region	.02 (2.30)
South Region	.002 (.01)
SMSA Status	.04 (5.90)*
Joint F-statistics, geographic dummies removed	2.30
F-statistic	44.83***
Adjusted R^2	.13
Mean of Dep. Var.	.18

*p<.05; **p<.01; ***p<.001

Table V-2-B

COEFFICIENTS FROM REGRESSION EQUATIONS PREDICTING COMPONENTS OF CARE FOR ISCHEMIC HEART DISEASE (ICDA=412, 413), INCLUDING GEOGRAPHIC VARIABLES, FIRST OFFICE VISIT (N=542)

	Chest X-ray		Laboratory Tests		Counseling		Systemic Drugs		Electro-Cardiogram	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	.98		-.12		.19		.33		-.05	
Physician Specialty:										
Family Practice	-.09	(2.84)	-.03	(.16)	.04	(.49)	.11	(2.44)	-.08	(1.73)
Cardiology	.04	(1.03)	-.01	(.05)	.02	(.23)	-.12	(5.77)*	.12	(6.86)**
Physician Characteristics:										
Age	.000	(.01)	.01	(9.89)**	.001	(.09)	.001	(.09)	.001	(.41)
Board Certification	.05	(2.06)	-.01	(.05)	.03	(.72)	.02	(.27)	.03	(.57)
Solo Practice	-.08	(3.72)	-.06	(1.84)	.05	(1.18)	.07	(1.75)	-.01	(.08)
Patient Characteristics:										
Age	-.001	(.74)	-.001	(.60)	-.02	(1.67)	.000	(.01)	-.002	(1.00)
Sex (male=0, female=1)	-.002	(.003)	.02	(.20)	.03	(.48)	.04	(.92)	-.05	(1.37)
Multiple Conditions	-.005	(.02)	.04	(.83)	.03	(.77)	.08	(3.69)	-.01	(.06)
Severity-Complexity	.14	(35.01)***	.09	(10.22)***	.02	(.41)	-.03	(1.36)	.14	(26.14)***
Urgency	-.05	(6.43)*	-.06	(7.61)**	-.01	(.13)	-.03	(1.76)	.03	(1.49)
Encounter Characteristics:										
Office Visit	---		---		---		---		---	
Professional Referral	.004	(.01)	-.04	(.67)	.04	(.78)	-.02	(.15)	.07	(1.74)
Number of Visits	---		---		---		---		---	
Geographic Characteristics:										
Northeast Region	-.02	(.16)	.02	(.08)	.06	(1.00)	-.05	(.59)	-.02	(.13)
North Central Region	-.07	(1.68)	-.08	(1.84)	-.01	(.06)	-.02	(.06)	-.07	(1.34)
South Region	.05	(1.11)	.09	(2.08)	.06	(1.03	.10	(2.15)	.03	(.24)
SMSA Status	.03	(.51)	.07	(1.57)	-.02	(.11)	.07	(1.34)	.16	(7.41)**
Joint F-statistics, geographic dummies removed	1.87		2.69*		.76		1.90		2.55*	
F-statistics	4.45***		2.66***		.87		2.36**		6.80***	
Adjusted R^2	.09		.04		.00		.04		.14	
Mean of Dep. Var.	.20		.33		.21		.51		.41	

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*p<.05; **p<.01; ***p<.001

Table V-2-B (Continued)

	Referrals	
Independent Variables	Coeff	(F)
Constant	.12	
Physician Specialty:		
Family Practice	.02	(.23)
Cardiology	.06	(3.19)
Physician Characteristics:		
Age	.002	(1.07)
Board Certification	.02	(.49)
Solo Practice	-.09	(7.33)**
Patient Characteristics:		
Age	-.004	(9.75)**
Sex (male=0, female=1)	.002	(.01)
Multiple Conditions	.07	(6.67)**
Severity-Complexity	.004	(.04)
Urgency	.01	(.11)
Encounter Characteristics:		
Office Visit	---	
Professional Referral	.25	(48.83)***
Number of Visits	---	
Geographic Characteristics:		
Northeast Region	-.03	(.42)
North Central Region	-.003	(.001)
South Region	.04	(.91)
SMSA Status	.05	(1.65)
Joint F-statistics, geographic dummies removed	1.09	
F-statistic	8.62***	
Adjusted R^2	.17	
Mean of Dep. Var.	.15	

*p<.05; **p<.01; ***p<.001

TABLE V-2-C

GEOGRAPHICAL BACKGROUND
CONDITION: ISCHEMIC HEART DISEASE (ICDA = 412, 413)
COMPONENT OF CARE: CHEST X-RAY

	Family Practice			Cardiology			Internal Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	9.3	(371)	(705)	18.4	(1321)	(2639)	18.4	(1060)	(2256)
SMSA	9.4	(225)	(419)	18.6	(1211)	(2456)	19.1	(895)	(1802)
Non-SMSA	9.1	(146)	(286)	16.5	(110)	(183)	14.4	(164)	(454)
Northeast	10.8	(86)	(118)	13.3	(488)	(854)	18.2	(390)	(586)
SMSA	9.5	(65)	(92)	14.0	(436)	(777)	18.7	(360)	(517)
Non-SMSA	15.1	(21)	(26)	7.8	(52)	(77)	12.5	(30)	(69)
North Central	7.9	(100)	(192)	21.5	(338)	(681)	15.7	(269)	(696)
SMSA	6.5	(52)	(100)	20.4	(307)	(637)	16.4	(223)	(524)
Non-SMSA	9.3	(48)	(92)	32.1	(31)	(44)	12.3	(46)	(172)
South	8.5	(146)	(300)	23.0	(333)	(727)	22.1	(256)	(567)
SMSA	10.1	(73)	(148)	22.9	(327)	(712)	25.0	(187)	(393)
Non-SMSA	6.9	(72)	(152)	26.7	(5)	(15)	14.4	(69)	(174)
West	12.5	(39)	(95)	17.7	(163)	(377)	17.3	(145)	(407)
SMSA	12.3	(34)	(79)	18.6	(142)	(330)	16.5	(125)	(368)
Non-SMSA	13.8	(5)	(16)	12.0	(21)	(47)	22.2	(20)	(39)

TABLE V-2-D

GEOGRAPHICAL BREAKDOWN
CONDITION: ISCHEMIC HEART DISEASE (ICDA = 412, 413)
COMPONENT OF CARE: LABORATORY TESTS

	Family Practice			Cardiology			Internal Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	27.7	(371)	(705)	31.8	(1321)	(2639)	41.8	(1060)	(2256)
SMSA	28.3	(225)	(419)	32.4	(1211)	(2456)	43.5	(895)	(1802)
Non-SMSA	26.8	(146)	(286)	26.1	(110)	(183)	32.0	(164)	(454)
Northeast	27.8	(86)	(118)	31.7	(488)	(854)	44.4	(390)	(586)
SMSA	31.8	(65)	(92)	33.5	(436)	(777)	45.4	(360)	(517)
Non-SMSA	15.1	(21)	(26)	38.0	(52)	(77)	32.2	(30)	(69)
North Central	23.1	(100)	(192)	28.8	(338)	(681)	40.4	(269)	(696)
SMSA	18.8	(52)	(100)	27.6	(307)	(637)	41.8	(223)	(524)
Non-SMSA	28.0	(48)	(92)	40.4	(31)	(44)	33.5	(46)	(172)
South	31.7	(146)	(300)	38.5	(333)	(727)	43.8	(256)	(567)
SMSA	34.9	(73)	(148)	38.6	(327)	(712)	48.5	(187)	(393)
Non-SMSA	28.3	(72)	(152)	26.7	(5)	(15)	31.2	(69)	(174)
West	24.3	(39)	(95)	25.0	(163)	(377)	33.4	(145)	(407)
SMSA	21.6	(34)	(79)	24.8	(142)	(330)	33.7	(125)	(368)
Non-SMSA	42.7	(5)	(16)	27.0	(21)	(47)	31.3	(20)	(39)

TABLE V-2-E

GEOGRAPHICAL BREAKDOWN
CONDITION: ISCHEMIC HEART DISEASE (ICDA = 412, 413)
COMPONENT OF CARE: ELECTROCARDIOGRAM

	Family Practice			Cardiology			Internal Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	18.2	(371)	(705)	43.7	(1321)	(2639)	36.3	(1060)	(2256)
SMSA	19.8	(225)	(419)	44.8	(1211)	(2456)	38.2	(895)	(1802)
Non-SMSA	15.6	(146)	(286)	31.9	(110)	(183)	25.3	(164)	(454)
Northeast	17.8	(86)	(118)	44.5	(488)	(854)	38.6	(390)	(586)
SMSA	17.2	(65)	(92)	45.9	(436)	(777)	38.9	(360)	(517)
Non-SMSA	19.9	(21)	(26)	33.5	(52)	(77)	34.8	(30)	(69)
North Central	20.1	(100)	(192)	35.0	(338)	(681)	34.1	(269)	(696)
SMSA	25.9	(52)	(100)	35.7	(307)	(637)	35.4	(223)	(524)
Non-SMSA	13.8	(48)	(92)	27.4	(31)	(44)	27.6	(46)	(172)
South	17.3	(146)	(300)	52.2	(333)	(727)	39.3	(256)	(567)
SMSA	19.6	(73)	(148)	52.9	(327)	(712)	45.7	(187)	(393)
Non-SMSA	15.0	(72)	(152)	6.7	(5)	(15)	21.9	(69)	(174)
West	17.3	(39)	(95)	42.4	(163)	(377)	28.5	(145)	(407)
SMSA	16.3	(34)	(79)	42.6	(142)	(330)	30.2	(125)	(368)
Non-SMSA	24.1	(5)	(16)	41.0	(21)	(47)	18.1	(20)	(39)

TABLE V-2-F

GEOGRAPHICAL BREAKDOWN
CONDITION: ISCHEMIC HEART DISEASE (ICDA = 412, 413)
COMPONENT OF CARE: COUNSELING

	Family Practice			Cardiology			Internal Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	18.7	(371)	(705)	24.2	(1321)	(2639)	25.0	(1060)	(2256)
SMSA	14.5	(225)	(419)	24.8	(1211)	(2456)	26.2	(895)	(1802)
Non-SMSA	25.2	(146)	(286)	16.9	(110)	(183)	18.3	(164)	(454)
Northeast	27.9	(86)	(118)	17.1	(488)	(854)	33.8	(390)	(586)
SMSA	14.1	(65)	(92)	19.1	(436)	(777)	33.5	(360)	(517)
Non-SMSA	71.0	(21)	(26)	.0	(52)	(77)	38.0	(30)	(69)
North Central	13.2	(100)	(192)	22.1	(338)	(681)	19.4	(269)	(696)
SMSA	16.3	(52)	(100)	19.7	(307)	(637)	21.9	(223)	(524)
Non-SMSA	9.8	(48)	(92)	45.7	(31)	(44)	7.2	(46)	(172)
South	15.5	(146)	(300)	38.0	(333)	(727)	23.9	(256)	(567)
SMSA	9.6	(73)	(148)	37.8	(327)	(712)	25.5	(187)	(393)
Non-SMSA	21.4	(72)	(152)	53.3	(5)	(15)	19.3	(69)	(174)
West	24.5	(39)	(95)	21.3	(163)	(377)	13.4	(145)	(407)
SMSA	22.8	(34)	(79)	23.5	(142)	(330)	13.8	(125)	(368)
Non-SMSA	36.4	(5)	(16)	6.1	(21)	(47)	10.8	(20)	(39)

TABLE V-2-G

GEOGRAPHICAL BREAKDOWN
CONDITION: ISCHEMIC HEART DISEASE (ICDA = 412, 413)
COMPONENT OF CARE: SYSTEMIC DRUGS

	Family Practice			Cardiology			Internal Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	65.3	(371)	(705)	42.4	(1321)	(2639)	67.2	(1060)	(2256)
SMSA	66.5	(225)	(419)	41.4	(1211)	(2456)	68.4	(895)	(1802)
Non-SMSA	63.3	(146)	(286)	51.0	(110)	(183)	60.7	(164)	(454)
Northeast	73.1	(86)	(118)	46.5	(488)	(854)	66.8	(390)	(586)
SMSA	68.7	(65)	(92)	45.7	(436)	(777)	66.4	(360)	(517)
Non-SMSA	86.7	(21)	(26)	53.5	(52)	(77)	72.7	(30)	(69)
North Central	69.8	(100)	(192)	34.1	(338)	(681)	70.7	(269)	(696)
SMSA	75.0	(52)	(100)	31.6	(307)	(637)	72.0	(223)	(524)
Non-SMSA	64.2	(48)	(92)	58.2	(31)	(44)	64.4	(46)	(172)
South	62.1	(146)	(300)	50.7	(333)	(727)	65.2	(256)	(567)
SMSA	66.9	(73)	(148)	50.4	(327)	(712)	69.8	(187)	(393)
Non-SMSA	57.3	(72)	(152)	73.3	(5)	(15)	52.5	(69)	(174)
West	48.2	(39)	(95)	28.3	(163)	(377)	65.1	(145)	(407)
SMSA	48.8	(34)	(79)	28.3	(142)	(330)	65.4	(125)	(368)
Non-SMSA	44.1	(5)	(16)	28.6	(21)	(47)	62.8	(20)	(39)

TABLE V-2-H

GEOGRAPHICAL BREAKDOWN
CONDITION: ISCHEMIC HEART DISEASE (ICDA = 412, 413)
COMPONENT OF CARE: REFERRAL

	Family Practice			Cardiology			Internal Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	8.4	(359)	(683)	23.0	(1127)	(2265)	11.4	(1000)	(2104)
SMSA	10.2	(217)	(408)	24.3	(1022)	(2095)	12.3	(851)	(1677)
Non-SMSA	5.7	(141)	(275)	10.0	(105)	(170)	6.8	(149)	(427)
Northeast	7.1	(86)	(118)	18.4	(401)	(666)	12.1	(370)	(533)
SMSA	9.6	(21)	(92)	20.6	(353	(601)	12.3	(342)	(466)
Non-SMSA	6.3	(65)	(26)	2.1	(48)	(65)	9.6	(28)	(67)
North Central	6.6	(93)	(182)	35.5	(250)	(542)	8.6	(249)	(639)
SMSA	7.1	(47)	(94)	38.1	(218)	(498)	7.8	(204)	(473)
Non-SMSA	6.1	(45)	(88)	17.5	(31)	(44)	12.3	(44)	(166)
South	9.9	(143)	(292)	22.4	(322)	(702)	12.0	(245)	(545)
SMSA	15.8	(72)	(145)	22.8	(316)	(687)	15.0	(186)	(386)
Non-SMSA	4.0	(71)	(147)	0	(5)	(15)	2.5	(59)	(159)
West	10.1	(38)	(91)	15.7	(155)	(355)	13.8	(137)	(387)
SMSA	10.0	(33)	(77)	15.1	(134)	(309)	15.4	(119)	(352)
Non-SMSA	10.6	(4)	(14)	19.1	(21)	(46)	2.8	(18)	(35)

TABLE V-2-I

GEOGRAPHICAL BREAKDOWN
CONDITION: ISCHEMIC HEART DISEASE (ICDA = 412, 413)
COMPONENT OF CARE: VISIT DURATION

	Family Practice			Cardiology			Internal Medicine		
	Minutes	n (w)	n	Minutes	n (w)	n	Minutes	n (w)	n
U.S. Total	11.8	(345)	(639)	20.6	(1219)	(2437)	18.7	(997)	(2072)
SMSA	11.6	(206)	(380)	21.0	(1115)	(2271)	19.5	(848)	(1694)
Non-SMSA	12.1	(139)	(259)	16.6	(104)	(166)	14.2	(150)	(378)
Northeast	12.7	(85)	(116)	19.0	(467)	(803)	20.5	(369)	(541)
SMSA	11.6	(65)	(90)	19.6	(416)	(729)	21.0	(339)	(472)
Non-SMSA	16.0	(21)	(26)	14.6	(51)	(74)	13.8	(30)	(69)
North Central	12.9	(98)	(186)	24.0	(282)	(603)	15.3	(237)	(593)
SMSA	12.1	(51)	(98)	24.8	(251)	(559)	15.5	(202)	(477)
Non-SMSA	13.8	(47)	(88)	17.9	(31)	(44)	14.1	(35)	(116)
South	9.7	(125)	(250)	18.5	(317)	(683)	20.0	(247)	(534)
SMSA	10.2	(58)	(119)	18.5	(311)	(668)	22.2	(182)	(380)
Non-SMSA	9.4	(67)	(131)	17.0	(5)	(15)	13.8	(65)	(154)
West	13.4	(37)	(87)	23.9	(153)	(348)	17.7	(144)	(404)
SMSA	13.2	(32)	(73)	24.4	(136)	(315)	18.0	(124)	(365)
Non-SMSA	16.4	(4)	(14)	19.9	(16)	(33)	15.9	(20)	(39)

Table V-3-A

COEFFICIENTS FROM REGRESSION EQUATIONS PREDICTING COMPONENTS OF CARE FOR ASTHMA (ICDA=493), INCLUDING GEOGRAPHIC VARIABLES, TOTAL VISITS (N=493)

Independent Variables	Chest X-ray		Laboratory Tests		Pulmonary Function		Systemic Drugs		Injection Other	
	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	.02		-.001		-.48		.67		-.49	
Physician Specialty:										
Family Practice	-.13	(11.77)***	-.13	(14.66)***	-.01	(.44)	-.13	(7.56)**	.04	(1.00)
Pediatrics	-.12	(7.67)**	-.11	(7.33)**	-.05	(3.63)	-.12	(4.41)*	.13	(6.68)**
Physician Characteristics:										
Age	.000	(.15)	.001	(.23)	.000	(.03)	-.004	(7.02)**	.01	(17.92)***
Board Certification	-.02	(.40)	.02	(.35)	.03	(3.42)	.03	(.52)	-.02	(.43)
Solo Practice	-.03	(1.41)	.02	(.37)	.01	(.24)	-.05	(1.46)	-.01	(.002)
Patient Characteristics:										
Age	-.001	(1.65)	-.001	(3.48)	.000	(.19)	-.000	(.15)	-.002	(2.69)
Sex (male=0, female=1)	.01	(.22)	-.05	(3.78)	-.01	(.20)	.02	(.26)	-.03	(.99)
Multiple Conditions	.06	(5.70)*	.07	(6.89)**	.03	(2.62)	.02	(.30)	.04	(1.53)
Severity-Complexity	.09	(23.54)***	.12	(41.43)***	.03	(6.36)*	.02	(.64)	-.01	(.28)
Urgency	.02	(2.46)	.01	(.39)	.01	(.89)	.05	(6.71)**	.10	(35.55)***
Encounter Characteristics:										
Office Visit	-.08	(9.14)**	-.08	(9.57)**	-.01	(.38)	.08	(5.16)*	.15	(23.20)***
Professional Referral	.05	(1.89)	-.005	(.02)	.10	(18.96)***	-.02	(.11)	-.01	(.11)
Number of Visits	-.003	(8.05)**	-.001	(.36)	-.001	(1.86)	-.002	(3.37)	.004	(13.29)***
Geographic Characteristics:										
Northeast Region	-.02	(.40)	-.02	(.38)	-.04	(3.31)	-.09	(3.49)	.18	(17.94)***
North Central Region	.02	(.24)	.03	(.77)	-.04	(2.37)	.08	(2.46)	-.02	(.21)
South Region	.002	(.003)	.06	(3.44)	-.02	(1.38)	.08	(3.41)	.07	(3.71)
SMSA Status	.07	(6.36)*	.01	(.09)	.04	(4.33)*	-.000	(.000)	.03	(.77)
Joint F-statistics, geographic dummies removed	1.69		1.82		2.04		4.48***		7.06***	
F-statistic	6.87***		6.39***		4.54***		3.61***		10.44***	
Adjusted R^2	.10		.09		.06		.05		.16	
Mean of Dep. Var.	.17		.14		.05		.67		.27	

*p<.05; **p<.01; ***p<.001

Table V-3-A (Continued)

	Referral		Counseling	
Independent Variables	Coeff	(F)	Coeff	(F)
Constant	.06		.31	
Physician Specialty:				
Family Practice	-.04	(.158)	.06	(2.31)
Pediatrics	-.01	(.03)	-.11	(4.18)*
Physician Characteristics:				
Age	.000	(.002)	-.003	(5.52)*
Board Certified	-.02	(.63)	.05	(2.72)
Solo Practice	.01	(.14)	.02	(.29)
Patient Characteristics:				
Age	-.000	(.25)	-.001	(.32)
Sex (male=0, female=1)	-.01	(.23)	.03	(1.40)
Multiple Conditions	-.03	(2.08)	.08	(6.32)*
Severity-Complexity	.03	(2.36)	.01	(.23)
Urgency	.04	(9.61)**	.02	(.88)
Encounter Characteristics:				
Office Visit	-.08	(11.57)***	-.01	(.07)
Professional Referral	.12	(13.35)***	-.03	(.49)
Number of Visits	-.02	(3.20)	-.001	(1.15)
Geographic Characteristics:				
Northeast Region	-.02	(.21)	-.05	(1.54)
North Central Region	-.01	(.17)	-.06	(1.66)
South Region	-.02	(.78)	.04	(1.38)
SMSA Status	-.01	(.06)	-.03	(1.06)
Joint F-statistics, geographic dummies removed	.21		2.74*	
F-statistic	4.63***		3.47***	
Adjusted R^2	.07		.05	
Mean of Dep. Var.	.11		.23	

*p<.05; **p<.01; ***p<.001

Table V-3-B

COEFFICIENTS FROM REGRESSION EQUATIONS PREDICTING COMPONENTS OF CARE FOR ASTHMA (ICDA=493), INCLUDING GEOGRAPHIC VARIABLES, FIRST OFFICE VISIT (N=259)

	Chest X-ray		Laboratory Tests		Pulmonary Function		Systemic Drugs		Injection Other	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	.59		.27		.10		.77		-.43	
Physician Specialty:										
Family Practice	-.22	(10.68)***	-.16	(5.69)*	.03	(.43)	-.04	(.19)	.05	(.29)
Pediatrics	-.22	(9.01)**	-.14	(4.16)*	-.06	(1.92)	-.06	(.32)	.30	(7.43)**
Physician Characteristics:										
Age	-.01	(.846)**	-.001	(.51)	.001	(.61)	-.01	(3.64)	.01	(3.28)
Board Certification	-.04	(.75)	.03	(.49)	-.02	(.39)	.01	(.03)	-.07	(.97)
Solo Practice	-.02	(.17)	.02	(.14)	-.06	(6.50)*	-.10	(2.91)	-.05	(.73)
Patient Characteristics:										
Age	-.000	(.14)	-.001	(.40)	.000	(.33)	-.002	(1.15)	.001	(.09)
Sex (male=0, female=1)	.003	(.01)	-.07	(2.99)	-.05	(4.09)**	.01	(.01)	-.02	(.18)
Multiple Conditions	.02	(.23)	.03	(.30)	.001	(.001)	-.03	(.18)	.12	(3.25)
Severity-Complexity	.09	(8.82)**	.11	(14.72)***	.04	(5.39)*	.05	(1.35)	-.04	(.84)
Urgency	-.05	(3.33)	-.07	(7.19)**	-.04	(5.90)*	.10	(7.62)**	.09	(6.44)*
Encounter Characteristics:										
Office Visits	---		---		---		---		---	
Professional Referrals	.08	(.91)	-.03	(.14)	.05	(1.21)	.03	(.05)	-.002	(.000)
Number of Visits	---		---		---		---		---	
Geographic Characteristics:										
Northeast Region	.01	(.01)	-.02	(.06)	-.06	(2.89)	-.09	(.95)	.20	(4.60)*
North Central Region	-.13	(3.97)*	.05	(.64)	-.07	(3.51)	.04	(.17)	-.05	(.25)
South Region	-.07	(1.51)	.08	(2.17)	-.03	(.80)	-.06	(.57)	.17	(4.46)*
SMSA Status	.02	(.22)	-.02	(.17)	.04	(2.88)	-.06	(.88)	.13	(4.39)*
Joint F-statistics, geographic dummies removed	1.71		.81		2.00		.89		4.21**	
F-statistic	3.18***		2.17**		2.74***		2.20**		4.25***	
Adjusted R^2	.11		.06		.09		.07		.16	
Mean of Dep. Var.	.11		.10		.03		.71		.34	

*p<.05; **p<.01; ***p<.001

Table V-3-B (Continued)

	Referrals		Counseling	
Independent Variables	Coeff	(F)	Coeff	(F)
Constant	-.06		.47	
Physician Specialty:				
Family Practice	-.09	(1.65)	.01	(.01)
Pediatrics	-.05	(.36)	-.14	(2.17)
Physician Characteristics:				
Age	.001	(.49)	-.003	(1.82)
Board Certification	.01	(.05)	.03	(.18)
Solo Practice	.003	(.004)	.01	(.02)
Patient Characteristics:				
Age	.001	(.17)	-.003	(3.40)
Sex (male=0, female=1)	-.05	(1.70)	.03	(.44)
Multiple Conditions	-.01	(.03)	.09	(2.22)
Severity-Complexity	.02	(.58)	.000	(.000)
Urgency	.04	(2.57)	.05	(1.98)
Encounter Characteristics:				
Office Visit	---		---	
Professional Referral	.19	(5.53)*	.06	(.35)
Number of Visits	---		---	
Geographic Characteristics:				
Northeast Region	-.02	(.08)	-.07	(.79)
North Central Region	-.06	(.95)	-.14	(2.83)
South Region	.01	(.01)	-.10	(2.14)
SMSA Status	.02	(.02)	-.14	(6.33)*
Joint F-statistics, geographic dummies removed	.45		2.16	
F-statistic	1.30		1.67	
Adjusted R^2	.02		.04	
Mean of Dep. Var.	.10		.19	

*p<.05; **p<.01; ***p<.001

TABLE V-3-C

GEOGRAPHICAL BREAKDOWN
CONDITION: ASTHMA (ICDA = 493)
COMPONENT OF CARE: CHEST X-RAY

	Family Practice			Internal Medicine			Pediatrics			Emergency Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	12.6	(109)	(226)	21.8	(133)	(303)	15.2	(175)	(437)	28.1	(76)	(122)
SMSA	11.4	(73)	(140)	24.0	(108)	(240)	16.4	(137)	(327)	25.5	(64)	(102)
Non-SMSA	15.1	(35)	(86)	12.1	(25)	(63)	10.8	(38)	(110)	41.3	(12)	(20)
Northeast	11.4	(26)	(39)	14.0	(33)	(57)	12.7	(52)	(105)	35.1	(10)	(15)
SMSA	14.8	(21)	(31)	10.0	(30)	(52)	13.3	(48)	(95)	39.8	(9)	(13)
Non-SMSA	36.2	(6)	(8)	62.1	(3)	(5)	5.6	(4)	(10)	.0	(1)	(2)
North Central	8.9	(19)	(50)	15.4	(32)	(71)	29.4	(22)	(61)	34.0	(16)	(29)
SMSA	13.5	(9)	(18)	20.6	(23)	(55)	33.8	(18)	(43)	33.2	(11)	(20)
Non-SMSA	4.6	(10)	(32)	2.1	(9)	(16)	10.0	(4)	(18)	35.8	(5)	(9)
South	15.0	(42)	(91)	33.8	(37)	(90)	12.7	(72)	(182)	47.0	(14)	(21)
SMSA	12.8	(30)	(63)	40.5	(29)	(64)	13.6	(53)	(124)	42.6	(11)	(17)
Non-SMSA	20.5	(12)	(28)	10.6	(8)	(26)	10.3	(20)	(58)	62.3	(3)	(4)
West	12.8	(21)	(46)	22.4	(31)	(85)	15.0	(28)	(89)	15.7	(35)	(57)
SMSA	17.0	(14)	(28)	25.4	(26)	(69)	15.7	(18)	(65)	12.9	(32)	(52)
Non-SMSA	5.1	(7)	(18)	7.3	(5)	(16)	13.8	(11)	(24)	44.1	(3)	(5)

TABLE V-3-D

GEOGRAPHICAL BREAKDOWN
CONDITION: ASTHMA (ICDA = 493)
COMPONENT OF CARE: LABORATORY TESTS

	Family Practice			Internal Medicine			Pediatrics			Emergency Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	8.1	(109)	(226)	19.2	(133)	(303)	15.8	(175)	(437)	9.8	(76)	(122)
SMSA	6.0	(73)	(140)	20.2	(108)	(240)	16.4	(137)	(327)	7.6	(64)	(102)
Non-SMSA	12.5	(35)	(86)	14.7	(25)	(63)	13.6	(38)	(110)	21.0	(12)	(20)
Northeast	7.6	(26)	(39)	13.9	(33)	(57)	14.2	(52)	(105)	4.9	(10)	(15)
SMSA	4.8	(21)	(31)	9.9	(30)	(52)	14.9	(48)	(95)	5.5	(9)	(13)
Non-SMSA	18.1	(6)	(8)	62.1	(3)	(5)	5.6	(4)	(10)	.0	(1)	(2)
North Central	6.0	(19)	(50)	15.8	(32)	(71)	25.3	(22)	(61)	13.0	(16)	(29)
SMSA	2.5	(9)	(18)	21.9	(23)	(55)	29.8	(18)	(43)	13.1	(11)	(20)
Non-SMSA	9.2	(10)	(32)	.0	(9)	(16)	5.0	(4)	(18)	12.8	(5)	(9)
South	7.7	(42)	(91)	23.2	(37)	(90)	17.0	(72)	(182)	25.4	(14)	(21)
SMSA	5.9	(30)	(63)	24.0	(29)	(64)	15.6	(53)	(124)	14.7	(11)	(17)
Non-SMSA	12.3	(12)	(28)	20.3	(8)	(26)	21.3	(20)	(58)	62.3	(3)	(4)
West	11.5	(21)	(46)	23.4	(31)	(85)	7.7	(28)	(89)	3.4	(25)	(57)
SMSA	10.5	(14)	(28)	26.7	(26)	(69)	9.2	(18)	(65)	3.8	(32)	(52)
Non-SMSA	13.3	(7)	(18)	7.3	(5)	(16)	5.1	(11)	(24)	.0	(3)	(5)

TABLE V-3-E

GEOGRAPHICAL BREAKDOWN
CONDITION: ASTHMA (ICDA = 493)
COMPONENT OF CARE: SYSTEMIC DRUGS

	Family Practice			Internal Medicine			Pediatrics			Emergency Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	61.7	(109)	(226)	74.8	(133)	(303)	61.9	(175)	(437)	25.7	(76)	(122)
SMSA	58.6	(73)	(140)	77.1	(108)	(240)	59.0	(137)	(327)	23.4	(64)	(102)
Non-SMSA	68.3	(35)	(86)	65.2	(25)	(63)	72.3	(38)	(110)	38.6	(12)	(20)
Northeast	66.7	(26)	(39)	59.9	(33)	(57)	40.7	(52)	(105)	39.7	(10)	(15)
SMSA	66.3	(21)	(31)	60.4	(30)	(52)	40.5	(48)	(95)	38.5	(9)	(13)
Non-SMSA	68.1	(6)	(8)	53.9	(3)	(5)	43.3	(4)	(10)	48.8	(1)	(2)
North Central	56.3	(19)	(50)	88.1	(32)	(71)	64.4	(22)	(61)	26.1	(16)	(29)
SMSA	45.0	(9)	(18)	89.9	(23)	(55)	68.8	(18)	(43)	17.6	(11)	(20)
Non-SMSA	66.5	(10)	(32)	83.2	(9)	(16)	44.8	(4)	(18)	46.1	(5)	(9)
South	63.3	(42)	(91)	73.3	(37)	(90)	72.5	(72)	(182)	38.5	(14)	(21)
SMSA	57.5	(30)	(63)	82.4	(29)	(64)	71.3	(53)	(124)	31.6	(11)	(17)
Non-SMSA	77.5	(12)	(28)	42.3	(8)	(26)	75.7	(20)	(58)	62.3	(3)	(4)
West	57.5	(21)	(46)	78.7	(31)	(85)	71.7	(28)	(89)	16.3	(35)	(57)
SMSA	58.1	(14)	(28)	79.1	(26)	(69)	62.8	(18)	(65)	17.9	(32)	(52)
Non-SMSA	56.3	(7)	(18)	76.6	(5)	(16)	86.5	(11)	(24)	.0	(3)	(5)

TABLE V-3-F

GEOGRAPHICAL BREAKDOWN
CONDITION: ASTHMA (ICDA = 493)
COMPONENT OF CARE: INJECTION OTHER

	Family Practice			Internal Medicine			Pediatrics			Emergency Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	24.2	(109)	(226)	16.4	(133)	(303)	38.9	(175)	(437)	79.0	(76)	(122)
SMSA	21.5	(73)	(140)	18.6	(108)	(240)	42.7	(137)	(327)	77.7	(64)	(102)
Non-SMSA	29.7	(35)	(86)	7.0	(25)	(63)	25.2	(38)	(110)	85.8	(12)	(20)
Northeast	39.5	(26)	(39)	19.0	(33)	(57)	58.2	(52)	(105)	48.3	(10)	(15)
SMSA	31.9	(21)	(31)	16.7	(30)	(52)	57.4	(48)	(95)	47.9	(9)	(13)
Non-SMSA	68.1	(6)	(8)	46.1	(3)	(5)	68.9	(4)	(10)	51.2	(1)	(2)
North Central	9.2	(19)	(50)	14.9	(32)	(71)	31.0	(22)	(61)	89.0	(16)	(29)
SMSA	.0	(9)	(18)	18.9	(23)	(55)	36.8	(18)	(43)	84.3	(11)	(20)
Non-SMSA	17.5	(10)	(32)	4.2	(9)	(16)	5.0	(4)	(18)	100.0	(5)	(9)
South	20.4	(42)	(91)	17.4	(37)	(90)	35.6	(72)	(182)	88.8	(14)	(21)
SMSA	23.5	(30)	(63)	21.8	(29)	(64)	38.7	(53)	(124)	85.6	(11)	(17)
Non-SMSA	12.3	(12)	(28)	2.3	(8)	(26)	27.5	(20)	(58)	100.0	(3)	(4)
West	26.2	(21)	(46)	14.2	(31)	(85)	17.9	(28)	(89)	79.5	(35)	(57)
SMSA	16.0	(14)	(28)	17.1	(26)	(69)	20.3	(18)	(65)	81.1	(32)	(52)
Non-SMSA	45.1	(7)	(18)	.0	(5)	(16)	13.9	(11)	(24)	63.4	(3)	(5)

TABLE V-3-G

GEOGRAPHICAL BREAKDOWN
CONDITION: ASTHMA (ICDA = 493)
COMPONENT OF CARE: PULMONARY FUNCTION

	Family Practice			Internal Medicine			Pediatrics			Emergency Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	4.5	(109)	(226)	9.5	(133)	(303)	3.2	(175)	(437)	---	---	---
SMSA	5.2	(73)	(140)	10.8	(108)	(240)	4.2	(137)	(327)	---	---	---
Non-SMSA	2.8	(35)	(86)	3.8	(25)	(63)	.0	(38)	(110)	---	---	---
Northeast	.0	(26)	(39)	8.2	(33)	(57)	3.8	(52)	(105)	---	---	---
SMSA	.0	(21)	(31)	8.9	(30)	(52)	4.1	(48)	(95)	---	---	---
Non-SMSA	.0	(6)	(8)	.0	(3)	(5)	.0	(4)	(10)	---	---	---
North Central	6.4	(19)	(50)	1.2	(32)	(71)	10.3	(22)	(61)	---	---	---
SMSA	10.9	(9)	(18)	1.6	(23)	(55)	12.6	(18)	(43)	---	---	---
Non-SMSA	2.4	(10)	(32)	.0	(9)	(16)	.0	(4)	(18)	---	---	---
South	2.4	(42)	(91)	17.5	(37)	(90)	1.7	(72)	(182)	---	---	---
SMSA	.8	(30)	(63)	22.6	(29)	(64)	2.3	(53)	(124)	---	---	---
Non-SMSA	6.3	(12)	(28)	.0	(8)	(26)	.0	(20)	(58)	---	---	---
West	12.2	(21)	(46)	9.9	(31)	(85)	.7	(28)	(89)	---	---	---
SMSA	18.8	(14)	(28)	8.2	(26)	(69)	1.1	(18)	(65)	---	---	---
Non-SMSA	.0	(7)	(18)	18.3	(5)	(16)	.0	(11)	(24)	---	---	---

TABLE V-3-H

GEOGRAPHICAL BREAKDOWN
CONDITION: ASTHMA (ICDA = 493)
COMPONENT OF CARE: COUNSELING

	Family Medicine			Internal Medicine			Pediatrics			Emergency Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	37.1	(109)	(226)	22.0	(133)	(303)	17.9	(175)	(437)	2.0	(76)	(122)
SMSA	33.2	(73)	(140)	24.0	(108)	(240)	15.2	(137)	(327)	2.4	(64)	(102)
Non-SMSA	45.2	(35)	(86)	13.4	(25)	(63)	27.7	(38)	(110)	.0	(12)	(20)
Northeast	33.7	(26)	(39)	14.6	(33)	(57)	11.5	(52)	(105)	.0	(10)	(15)
SMSA	33.1	(21)	(31)	15.2	(30)	(52)	12.3	(48)	(95)	.0	(9)	(13)
Non-SMSA	36.2	(6)	(8)	7.4	(3)	(5)	.0	(4)	(10)	.0	(1)	(2)
North Central	35.3	(19)	(50)	7.3	(32)	(71)	17.5	(22)	(61)	6.1	(16)	(29)
SMSA	42.9	(9)	(18)	7.4	(23)	(55)	20.3	(18)	(43)	8.7	(11)	(20)
Non-SMSA	28.5	(10)	(32)	7.1	(9)	(16)	5.0	(4)	(18)	.0	(5)	(9)
South	38.7	(42)	(91)	39.1	(37)	(90)	18.0	(72)	(182)	.0	(14)	(21)
SMSA	30.6	(30)	(63)	42.8	(29)	(64)	12.7	(53)	(124)	.0	(11)	(17)
Non-SMSA	58.4	(12)	(28)	26.4	(8)	(26)	31.7	(20)	(58)	.0	(3)	(4)
West	39.6	(21)	(46)	24.7	(31)	(85)	30.1	(28)	(89)	1.4	(35)	(57)
SMSA	32.3	(14)	(28)	28.4	(26)	(69)	25.2	(18)	(65)	1.6	(32)	(52)
Non-SMSA	53.2	(7)	(18)	6.2	(5)	(16)	38.3	(11)	(24)	.0	(3)	(5)

TABLE V-3-I

GEOGRAPHICAL BREAKDOWN
CONDITION: ASTHMA (ICDA = 493)
COMPONENT OF CARE: REFERRAL

	Family Medicine			Internal Medicine			Pediatrics			Emergency Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	7.9	(102)	(215)	13.5	(123)	(273)	14.7	(167)	(418)	63.7	(72)	(116)
SMSA	3.5	(68)	(132)	13.6	(103)	(220)	16.8	(133)	(318)	63.1	(61)	(98)
Non-SMSA	16.5	(34)	(83)	12.6	(19)	(53)	6.4	(34)	(100)	67.2	(11)	(18)
Northeast	7.7	(26)	(38)	16.0	(32)	(54)	19.3	(51)	(103)	49.6	(8)	(12)
SMSA	.0	(21)	(30)	17.4	(30)	(49)	20.0	(48)	(95)	58.3	(7)	(10)
Non-SMSA	36.2	(6)	(8)	.0	(3)	(5)	6.9	(3)	(8)	.0	(1)	(2)
North Central	11.2	(18)	(45)	9.2	(31)	(63)	18.2	(20)	(56)	80.3	(16)	(29)
SMSA	.0	(8)	(15)	8.3	(22)	(48)	22.3	(16)	(40)	85.1	(11)	(20)
Non-SMSA	20.4	(10)	(30)	11.4	(9)	(15)	.0	(4)	(16)	69.1	(5)	(9)
South	9.4	(40)	(89)	17.8	(33)	(84)	10.1	(71)	(178)	61.5	(14)	(21)
SMSA	7.4	(28)	(61)	16.3	(28)	(63)	13.1	(52)	(123)	59.4	(11)	(17)
Non-SMSA	14.1	(12)	(28)	26.6	(5)	(21)	1.8	(19)	(55)	68.9	(3)	(4)
West	2.0	(19)	(43)	10.1	(27)	(72)	15.6	(25)	(81)	60.1	(34)	(54)
SMSA	3.2	(12)	(26)	10.8	(24)	(60)	13.8	(16)	(60)	57.5	(32)	(51)
Non-SMSA	.0	(7)	(17)	5.7	(3)	(12)	19.2	(9)	(21)	100.0	(2)	(3)

TABLE V-3-J

GEOGRAPHICAL BREAKDOWN
CONDITION: ASTHMA (ICDA = 493)
COMPONENT OF CARE: VISIT DURATION

	Family Medicine			Internal Medicine			Pediatrics			Emergency Medicine		
	Minutes	n (w)	n	Minutes	n (w)	n	Minutes	n (w)	n	Minutes	n (w)	n
U.S. Total	13.1	(96)	(196)	16.1	(124)	(279)	16.2	(161)	(400)	22.7	(65)	(106)
SMSA	13.6	(64)	(117)	16.5	(102)	(227)	17.5	(127)	(304)	22.6	(54)	(88)
Non-SMSA	12.3	(32)	(79)	14.3	(23)	(52)	11.4	(34)	(96)	23.5	(11)	(18)
Northeast	12.1	(26)	(38)	13.8	(31)	(52)	22.7	(51)	(103)	20.6	(8)	(12)
SMSA	11.7	(20)	(30)	13.2	(28)	(47)	23.7	(48)	(93)	22.3	(7)	(10)
Non-SMSA	13.4	(6)	(8)	20.0	(3)	(5)	9.7	(4)	(10)	11.0	(1)	(2)
North Central	18.8	(16)	(43)	15.7	(32)	(69)	14.8	(18)	(48)	19.8	(12)	(23)
SMSA	22.1	(8)	(15)	16.2	(23)	(53)	16.6	(15)	(34)	17.0	(7)	(14)
Non-SMSA	15.6	(8)	(28)	14.3	(9)	(16)	6.3	(3)	(14)	24.2	(5)	(9)
South	11.1	(35)	(73)	18.2	(33)	(76)	12.6	(66)	(171)	30.8	(14)	(21)
SMSA	12.0	(23)	(47)	20.0	(27)	(61)	12.6	(48)	(116)	31.1	(11)	(17)
Non-SMSA	9.2	(11)	(26)	10.1	(6)	(15)	12.6	(19)	(55)	29.8	(3)	(4)
West	13.4	(19)	(42)	16.7	(29)	(82)	13.5	(25)	(78)	20.7	(31)	(50)
SMSA	14.1	(12)	(25)	16.7	(24)	(66)	14.6	(16)	(61)	20.8	(29)	(47)
Non-SMSA	12.4	(7)	(17)	16.6	(5)	(16)	11.3	(8)	(17)	19.6	(2)	(3)

Table V-4-A

COEFFICIENTS FROM REGRESSION EQUATIONS PREDICTING COMPONENTS OF CARE FOR TONSILLITIS AND PHARYNGITIS (ICDA=462, 463), INCLUDING GEOGRAPHIC VARIABLES, TOTAL VISITS (N=3424)

	Chest X-ray		Laboratory Tests		Cultures		Systemic Drugs		Injection Other	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	-.02		.06				.07		-.26	
Physician Specialty:										
Family Practice	-.02	(9.19)**	-.07	(8.09)**	-.16	(20.48)***	-.04	(1.45)	.06	(5.22)*
Pediatrics	-.02	(5.15)*	-.10	(15.95)***	.12	(10.76)**	-.16	(19.04)***	-.01	(.09)
Physician Characteristics:										
Age	.000	(2.08)	.002	(17.19)***	-.01	(6.078)***	.002	(9.29)**	.002	(12.59)***
Board Certification	.002	(.30)	.02	(2.21)	.04	(3.73)	.04	(3.81)	-.02	(1.07)
Solo Practice	.002	(.24)	-.02	(4.20)*	-.04	(4.70)*	.01	(.74)	.03	(6.33)*
Patient Characteristics:										
Age	.001	(27.94)***	.001	(3.95)*	.001	(1.34)	.000	(.05)	-.000	(.61)
Sex (male=0, female=1)	-.01	(9.86)**	-.005	(.20)	.02	(1.92)	-.01	(.55)	-.02	(3.80)
Multiple Conditions	.01	(11.93)**	.06	(19.05)***	-.06	(10.23)**	.05	(7.35)**	-.002	(.03)
Severity-Complexity	.01	(10.54)**	.03	(12.95)***	.02	(2.47)	.03	(9.77)**	.04	(27.81)***
Urgency	.01	(5.69)*	.005	(.25)	.01	(1.06)	.09	(43.11)***	.05	(20.28)***
Encounter Characteristics:										
Office Visit	-.02	(15.60)***	-.10	(22.32)***	.01	(.16)	.07	(6.18)*	.03	(1.91)
Professional Referral	.06	(34.79)***	.05	(1.88)	.08	(2.53)	-.04	(.65)	-.06	(2.44)
Number of Visits	.01	(36.38)***	.01	(2.87)	-.02	(8.36)**	-.01	(2.79)	.01	(2.95)
Geographic Characteristics:										
Northeast Region	.01	(3.44)	-.001	(.001)	-.06	(4.56)*	.01	(.10)	-.06	(10.56)**
North Central Region	.01	(1.40)	.06	(13.61)***	-.12	(23.36)***	-.02	(.51)	-.01	(.43)
South Region	-.000	(.000)	.06	(13.81)***	-.15	(47.26)***	.04	(3.42)	.11	(44.48)***
SMSA Status	.001	(.02)	-.02	(2.30)	.06	(9.13)**	-.07	(14.83)***	.04	(8.44)**
Joint F-statistics, geographic dummies removed	1.50		7.81***		17.12***		5.98***		32.49***	
F-statistic	14.32***		10.53***		25.26***		10.13***		15.59***	
Adjusted R^2	.06		.05		.11		.04		.07	
Mean of Dep. Var.	.01		.12		.52		.69		.15	

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*p<.05; **p<.01; ***p<.001

Table V-4-A (Continued)

	Referrals
Independent Variables	Coeff (F)
Constant	.06
Physician Specialty:	
Family Practice	-.01 (.40)
Pediatrics	.002 (.04)
Physician Characteristics:	
Age	.000 (.000)
Board Certification	-.003 (.23)
Solo Practice	-.000 (.001)
Patient Characteristics:	
Age	-.000 (2.04)
Sex (male=0, female=1)	-.01 (2.34)
Multiple Conditions	.03 (21.59)***
Severity-Complexity	.001 (.06)
Urgency	-.000 (.001)
Encounter Characteristics:	
Office Visit	-.07 (43.27)***
Professional Referral	.22 (181.44)***
Number of Visits	.01 (20.37)***
Geographic Characteristics:	
Northeast Region	.02 (6.19)*
North Central Region	.01 (.42)
South Region	.01 (2.09)
SMSA Status	.002 (.06)
Joint F-statistics, geographic dummies removed	1.72
F-statistic	19.21***
Adjusted R^2	.08
Mean of Dep. Var.	.03

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*p<.05; **p<.01; ***p<.001

Table V-4-B

COEFFICIENTS FROM REGRESSION EQUATIONS PREDICTING COMPONENTS OF CARE FOR TONSILLITIS AND PHARYNGITIS (ICDA=462, 463), INCLUDING GEOGRAPHIC VARIABLES, OFFICE FOLLOW-UP VISITS (N=345)

Independent Variables	Chest X-ray		Laboratory Tests		Cultures		Systemic Drugs		Injection Other	
	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	.04		.27		.38		-.01		-.52	
Physician Specialty:										
Family Practice	-.05	(3.61)	-.12	(1.56)	-.08	(.47)	.05	(.18)	.06	(.38)
Pediatrics	-.05	(2.26)	-.17	(2.79)	.10	(.65)	.15	(1.40)	-.01	(.01)
Physician Characteristics:										
Age	.000	(.30)	.001	(.42)	-.01	(5.17)*	.01	(3.69)	.01	(7.32)**
Board Certification	.02	(1.01)	.002	(.002)	.01	(.06)	.07	(1.31)	-.05	(.82)
Solo Practice	-.02	(1.40)	-.02	(.19)	-.02	(.10)	-.03	(.35)	.08	(2.48)
Patient Characteristics:										
Age	.001	(2.81)	-.001	(.48)	.004	(2.23)	.003	(1.01)	-.004	(4.02)*
Sex (male=0, female=1)	-.01	(.57)	.001	(.001)	.18	(12.93)***	.08	(2.20)	-.06	(1.90)
Multiple Conditions	.01	(.21)	.01	(.01)	-.10	(3.52)	.07	(1.47)	-.01	(.06)
Severity-Complexity	.02	(4.36)*	.05	(3.35)	.03	(.74)	-.02	(.36)	.05	(2.95)
Urgency	-.004	(.19)	.02	(.54)	-.01	(.05)	.11	(7.38)**	.14	(17.48)***
Encounter Characteristics:										
Office Visit	---		---		---		---		---	
Professional Referral	-.04	(.88)	.32	(4.46)*	.18	(.95)	-.25	(1.70)	-.07	(.19)
Number of Visits	-.004	(2.47)	-.01	(.89)	.01	(.34)	-.001	(.01)	.003	(.10)
Geographic Characteristics:										
Northeast Region	-.02	(.90)	-.15	(4.40)*	.28	(9.63)**	-.07	(.63)	-.07	(.76)
North Central Region	-.02	(1.16)	-.17	(5.74)*	-.11	(1.73)	-.14	(2.41)	-.02	(.09)
South Region	.003	(.03)	-.02	(.20)	.06	(1.13)	-.000	(.000)	.03	(.43)
SMSA Status	.003	(.03)	-.02	(.20)	.06	(1.13)	-.000	(.000)	.03	(.43)
Joint F-statistics, geographic dummies removed	1.19		1.70		7.10***		.71		5.00***	
F-statistic	1.50		1.40		3.92***		1.60		4.95***	
Adjusted R^2	.02		.02		.12		.03		.16	
Mean of Dep. Var.	.01		.18		.34		.66		.25	

*p<.05; **p<.01; ***p<.001

Table V-4-B (Continued)

	Referrals	
Independent Variables	Coeff	(F)
Constant	.09	
Physician Specialty:		
Family Practice	.05	(1.00)
Pediatrics	.03	(.34)
Physician Characteristics:		
Age	-.001	(1.48)
Board Certification	.01	(.26)
Solo Practice	.01	(.04)
Patient Characteristics:		
Age	.000	(.03)
Sex (male=0, female=1)	-.05	(4.34)*
Multiple Conditions	-.02	(.40)
Severity-Complexity	.04	(6.40)*
Urgency	-.03	(3.02)
Encounter Characteristics:		
Office Visit	---	
Professional Referral	.22	(6.74)*
Number of Visits	.003	(.33)
Geographic Characteristics:		
Northeast Region	.02	(.19)
North Central Region	-.04	(1.10)
South Region	.01	(.04)
SMSA Status	.02	(.33)
Joint F-statistics, geographic dummies removed	.93	
F-statistic	1.87*	
Adjusted R^2	.04	
Mean of Dep. Var.	.05	

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*p<.05; **p<.01; ***p<.001

TABLE V-4-C

GEOGRAPHICAL BREAKDOWN
CONDITION: PHARYNGITIS AND TONSILLITIS (ICDA = 462, 463)
COMPONENT OF CARE: CHEST X-RAY

	Family Practice			Internal Medicine			Pediatrics			Emergency Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	1.0	(532)	(1053)	5.2	(131)	(280)	.5	(894)	(2359)	7.0	(173)	(281)
SMSA	1.2	(346)	(639)	6.3	(102)	(224)	.5	(734)	(1962)	9.0	(134)	(220)
Non-SMSA	.8	(185)	(414)	1.1	(29)	(56)	.8	(160)	(397)	.0	(39)	(61)
Northeastern	1.9	(91)	(146)	15.4	(26)	(45)	.7	(171)	(413)	6.6	(36)	(53)
SMSA	2.4	(73)	(117)	18.2	(22)	(40)	.8	(161)	(381)	14.4	(16)	(24)
Non-SMSA	.0	(19)	(29)	.0	(4)	(5)	.0	(10)	(32)	.0	(20)	(29)
North Central	2.5	(130)	(311)	2.5	(61)	(121)	1.1	(142)	(397)	11.3	(48)	(82)
SMSA	3.5	(58)	(127)	2.6	(45)	(86)	1.1	(130)	(344)	12.2	(45)	(75)
Non-SMSA	1.7	(72)	(184)	2.1	(15)	(35)	1.6	(12)	(53)	.0	(4)	(7)
South	.1	(206)	(391)	2.4	(24)	(57)	.4	(402)	(1069)	9.8	(44)	(73)
SMSA	.0	(129)	(232)	2.9	(20)	(48)	.1	(306)	(841)	12.6	(34)	(58)
Non-SMSA	.3	(76)	(159)	.0	(4)	(9)	1.1	(96)	(228)	.0	(10)	(15)
West	.2	(105)	(205)	3.4	(21)	(57)	.2	(179)	(480)	.0	(45)	(73)
SMSA	.3	(87)	(163)	4.6	(15)	(50)	.3	(138)	(396)	.0	(39)	(63)
Non-SMSA	.0	(18)	(42)	.0	(6)	(7)	.0	(41)	(84)	.0	(6)	(10)

TABLE V-4-D

GEOGRAPHICAL BREAKDOWN
CONDITION: PHARYNGITIS AND TONSILLITIS (ICDA = 462, 463)
COMPONENT OF CARE: LABORATORY TESTS

	Family Practice			Internal Medicine			Pediatrics			Emergency Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	13.4	(532)	(1053)	42.2	(131)	(280)	10.0	(894)	(2359)	15.8	(173)	(281)
SMSA	12.1	(346)	(639)	27.5	(102)	(224)	9.8	(734)	(1962)	17.6	(134)	(220)
Non-SMSA	15.7	(185)	(414)	6.2	(29)	(56)	11.0	(160)	(397)	9.5	(39)	(61)
Northeast	5.5	(91)	(146)	23.6	(26)	(45)	9.1	(171)	(413)	7.6	(36)	(53)
SMSA	3.7	(73)	(117)	27.7	(22)	(40)	9.2	(161)	(381)	16.7	(16)	(24)
Non-SMSA	12.9	(19)	(29)	.0	(4)	(5)	7.4	(10)	(32)	.0	(20)	(29)
North Central	15.7	(130)	(311)	20.8	(61)	(121)	11.4	(142)	(397)	16.6	(48)	(82)
SMSA	13.2	(58)	(127)	25.9	(45)	(86)	9.3	(130)	(344)	16.8	(45)	(75)
Non-SMSA	17.8	(72)	(184)	5.8	(15)	(35)	33.4	(12)	(53)	14.3	(4)	(7)
South	15.5	(206)	(391)	40.5	(24)	(57)	11.6	(402)	(1069)	28.4	(44)	(73)
SMSA	15.0	(129)	(232)	43.7	(20)	(48)	12.1	(306)	(841)	27.2	(34)	(58)
Non-SMSA	16.3	(76)	(159)	23.9	(4)	(9)	10.1	(96)	(228)	32.6	(10)	(15)
West	13.1	(105)	(205)	8.1	(21)	(57)	6.3	(179)	(480)	8.9	(45)	(73)
SMSA	14.2	(87)	(163)	11.1	(15)	(50)	6.0	(138)	(396)	10.2	(39)	(63)
Non-SMSA	7.4	(18)	(42)	.0	(6)	(7)	7.3	(41)	(84)	.0	(6)	(10)

TABLE V-4-E

GEOGRAPHICAL BREAKDOWN
CONDITION: PHARYNGITIS AND TONSILLITIS (ICDA = 462, 463)
COMPONENT OF CARE: CULTURES

	Family Practice			Internal Medicine			Pediatrics			Emergency Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	29.7	(532)	(1053)	42.7	(131)	(280)	60.7	(894)	(2359)	43.8	(173)	(281)
SMSA	31.4	(346)	(639)	48.2	(102)	(224)	61.7	(734)	(1962)	41.6	(134)	(220)
Non-SMSA	26.5	(185)	(414)	23.0	(29)	(56)	56.0	(160)	(397)	51.2	(39)	(61)
Northeast	26.6	(91)	(146)	32.4	(26)	(45)	67.8	(171)	(413)	63.7	(36)	(53)
SMSA	20.0	(73)	(117)	34.0	(22)	(40)	68.9	(161)	(381)	49.9	(16)	(24)
Non-SMSA	52.4	(19)	(29)	23.3	(4)	(5)	51.1	(10)	(32)	75.2	(20)	(29)
North Central	28.3	(130)	(311)	44.0	(61)	(121)	55.3	(142)	(397)	51.9	(48)	(82)
SMSA	31.6	(58)	(127)	50.2	(45)	(86)	54.4	(130)	(344)	49.3	(45)	(75)
Non-SMSA	25.6	(72)	(184)	25.9	(15)	(35)	64.2	(12)	(53)	85.7	(4)	(7)
South	20.2	(206)	(391)	61.8	(24)	(57)	56.3	(402)	(1069)	31.8	(44)	(73)
SMSA	24.2	(129)	(232)	66.5	(20)	(48)	58.0	(306)	(841)	37.9	(34)	(58)
Non-SMSA	13.5	(76)	(159)	37.1	(4)	(9)	51.0	(96)	(228)	10.3	(10)	(15)
West	52.9	(105)	(205)	30.0	(21)	(57)	67.9	(179)	(480)	30.8	(45)	(73)
SMSA	51.8	(87)	(163)	39.0	(15)	(50)	68.2	(138)	(396)	32.6	(39)	(63)
Non-SMSA	57.9	(18)	(42)	5.7	(6)	(7)	66.6	(41)	(84)	18.9	(6)	(10)

TABLE V-4-F

GEOGRAPHICAL BREAKDOWN
CONDITION: PHARYNGITIS AND TONSILLITIS (ICDA = 462, 463)
COMPONENT OF CARE: SYSTEMIC DRUGS

	Family Practice			Internal Medicine			Pediatrics			Emergency Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	73.0	(532)	(1053)	74.1	(131)	(280)	65.2	(894)	(2359)	66.3	(173)	(281)
SMSA	66.9	(346)	(639)	74.4	(102)	(224)	63.4	(734)	(1962)	61.7	(134)	(220)
Non-SMSA	84.6	(185)	(414)	73.2	(29)	(56)	73.4	(160)	(397)	82.1	(39)	(61)
Northeast	71.8	(91)	(146)	77.9	(26)	(45)	64.4	(171)	(413)	78.6	(36)	(53)
SMSA	64.9	(73)	(117)	84.5	(22)	(40)	66.0	(161)	(381)	60.0	(16)	(24)
Non-SMSA	98.7	(19)	(29)	40.7	(4)	(5)	37.6	(10)	(32)	94.3	(20)	(29)
North Central	74.5	(130)	(311)	77.2	(61)	(121)	55.4	(142)	(397)	67.1	(48)	(82)
SMSA	68.9	(58)	(127)	73.6	(45)	(86)	54.4	(130)	(344)	65.7	(45)	(75)
Non-SMSA	79.0	(72)	(184)	87.8	(15)	(35)	66.1	(12)	(53)	85.7	(4)	(7)
South	77.0	(206)	(391)	71.6	(24)	(57)	68.1	(402)	(1069)	62.8	(44)	(73)
SMSA	72.0	(129)	(232)	70.4	(20)	(48)	65.3	(306)	(841)	57.7	(34)	(58)
Non-SMSA	85.5	(76)	(159)	77.7	(4)	(9)	77.9	(96)	(228)	80.9	(10)	(15)
West	65.7	(105)	(205)	63.3	(21)	(57)	67.1	(179)	(480)	58.9	(45)	(73)
SMSA	59.6	(87)	(163)	67.0	(15)	(50)	64.4	(138)	(396)	61.5	(39)	(63)
Non-SMSA	88.4	(18)	(42)	53.2	(6)	(7)	76.3	(41)	(84)	41.8	(6)	(10)

TABLE V-4-G

GEOGRAPHICAL BREAKDOWN
CONDITION: PHARYNGITIS AND TONSILLITIS (ICDA = 462, 453)
COMPONENT OF CARE: INJECTION OTHER

	Family Practice			Internal Medicine			Pediatrics			Emergency Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	16.7	(532)	(1053)	10.8	(131)	(280)	15.2	(894)	(2359)	27.5	(173)	(281)
SMSA	18.8	(346)	(639)	8.2	(102)	(224)	16.4	(734)	(1962)	27.7	(134)	(220)
Non-SMSA	12.8	(185)	(414)	20.1	(29)	(56)	10.1	(160)	(397)	26.7	(39)	(61)
Northeast	16.1	(91)	(146)	5.3	(26)	(45)	6.2	(171)	(413)	7.9	(36)	(53)
SMSA	18.2	(73)	(117)	6.3	(22)	(40)	6.6	(161)	(381)	3.8	(16)	(24)
Non-SMSA	8.0	(19)	(29)	0	(4)	(5)	0	(10)	(32)	11.3	(20)	(29)
North Central	7.2	(130)	(311)	6.6	(61)	(121)	10.9	(142)	(397)	38.0	(48)	(82)
SMSA	3.2	(58)	(127)	7.6	(45)	(86)	11.3	(130)	(344)	38.8	(45)	(75)
Non-SMSA	10.4	(72)	(184)	3.7	(15)	(35)	7.6	(12)	(53)	28.6	(4)	(7)
South	24.3	(206)	(391)	13.4	(24)	(57)	22.7	(402)	(1069)	30.5	(44)	(73)
SMSA	29.3	(129)	(232)	9.9	(20)	(48)	26.2	(306)	(841)	21.4	(34)	(58)
Non-SMSA	15.8	(76)	(159)	32.0	(4)	(9)	11.8	(96)	(228)	62.8	(10)	(15)
West	14.2	(105)	(205)	27.0	(21)	(57)	10.5	(179)	(480)	28.8	(45)	(73)
SMSA	14.2	(87)	(163)	10.8	(15)	(50)	10.8	(138)	(396)	30.7	(39)	(10)
Non-SMSA	14.2	(18)	(42)	70.9	(6)	(7)	9.3	(41)	(84)	16.9	(6)	(63)

TABLE V-4-H

GEOGRAPHICAL BREAKDOWN
CONDITION: PHARYNGITIS AND TONSILLITIS (ICDA = 462, 463)
COMPONENT OF CARE: REFERRAL

	Family Medicine			Internal Medicine			Pediatrics			Emergency Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	2.0	(515)	(1022)	2.9	(129)	(271)	3.6	(851)	(2258)	48.4	(169)	(275)
SMSA	2.3	(334)	(615)	1.6	(101)	(217)	3.7	(714)	(1907)	49.1	(130)	(215)
Non-SMSA	1.4	(182)	(407)	7.5	(28)	(54)	2.6	(137)	(351)	46.0	(38)	(60)
Northeast	2.1	(91)	(145)	2.8	(25)	(41)	5.8	(167)	(402)	50.3	(34)	(51)
SMSA	2.6	(72)	(116)	3.3	(21)	(36)	5.9	(158)	(371)	62.9	(15)	(22)
Non-SMSA	.0	(19)	(29)	.0	(4)	(5)	4.1	(10)	(31)	40.7	(20)	(29)
North Central	.56	(126)	(300)	3.2	(60)	(119)	4.6	(134)	(377)	56.9	(48)	(82)
SMSA	.0	(54)	(117)	.0	(45)	(84)	4.9	(122)	(325)	56.9	(45)	(75)
Non-SMSA	.98	(72)	(183)	12.3	(15)	(35)	1.7	(12)	(52)	57.1	(4)	(7)
South	3.2	(200)	(385)	4.1	(23)	(55)	2.9	(385)	(1025)	46.3	(41)	(71)
SMSA	4.6	(125)	(228)	3.8	(20)	(48)	2.8	(298)	(822)	40.0	(33)	(56)
Non-SMSA	.8	(75)	(157)	6.2	(3)	(7)	3.4	(87)	(203)	67.4	(10)	(15)
West	1.3	(98)	(192)	.9	(21)	(56)	1.9	(164)	(454)	39.5	(43)	(71)
SMSA	.0	(82)	(154)	1.3	(15)	(49)	2.3	(136)	(389)	42.4	(38)	(62)
Non-SMSA	7.4	(17)	(38)	.0	(6)	(7)	.0	(28)	(65)	18.7	(5)	(9)

TABLE V-4-I

GEOGRAPHICAL BREAKDOWN
CONDITION: PHARYNGITIS AND TONSILLITIS (ICDA = 462, 463)
COMPONENT OF CARE: VISIT DURATION

	Family Medicine			Internal Medicine			Pediatrics			Emergency Medicine		
	Minutes	n (w)	n	Minutes	n (w)	n	Minutes	n (w)	n	Minutes	n (w)	n
U.S. Total	8.4	(502)	(977)	10.8	(126)	(266)	9.5	(830)	(2181)	11.8	(159)	(260)
SMSA	8.7	(323)	(586)	11.7	(97)	(212)	9.5	(685)	(1825)	12.3	(121)	(200)
Non-SMSA	8.1	(179)	(391)	8.0	(28)	(54)	9.2	(145)	(356)	10.1	(38)	(60)
Northeast	8.2	(90)	(145)	12.6	(25)	(41)	11.5	(165)	(395)	7.5	(34)	(51)
SMSA	8.5	(72)	(116)	13.1	(21)	(36)	11.6	(155)	(363)	7.9	(15)	(22)
Non-SMSA	8.6	(19)	(29)	10.0	(4)	(5)	10.3	(10)	(32)	7.3	(20)	(29)
North Central	9.0	(125)	(295)	10.3	(58)	(115)	9.2	(129)	(361)	14.0	(45)	(77)
SMSA	9.9	(55)	(119)	11.6	(43)	(82)	9.3	(118)	(318)	14.4	(41)	(70)
Non-SMSA	8.2	(70)	(176)	6.9	(15)	(33)	8.4	(10)	(43)	8.9	(4)	(7)
South	7.9	(188)	(353)	11.4	(23)	(55)	9.0	(361)	(958)	14.4	(42)	(68)
SMSA	8.1	(114)	(203)	11.4	(19)	(46)	8.9	(278)	(761)	13.9	(32)	(53)
Non-SMSA	7.6	(74)	(150)	11.3	(4)	(9)	9.6	(84)	(197)	15.7	(10)	(15)
West	9.1	(99)	(184)	9.3	(20)	(55)	8.7	(175)	(467)	10.3	(39)	(64)
SMSA	9.2	(82)	(148)	10.0	(14)	(48)	8.8	(134)	(383)	10.1	(33)	(55)
Non-SMSA	8.9	(16)	(36)	7.4	(6)	(7)	8.3	(41)	(84)	11.0	(5)	(9)

Table V-5-A

COEFFICIENTS FROM REGRESSION EQUATIONS PREDICTING COMPONENTS OF CARE FOR NASOPHARYNGITIS AND URI (ICDA=460 AND 465), INCLUDING GEOGRAPHIC VARIABLES, TOTAL VISITS (N=3406)

	Chest X-ray		Laboratory Tests		Cultures		Systemic Drugs		Injection Other	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	-.02		-.10		.06		.54		-.16	
Physician Specialty:										
Family Practice	-.04	(17.90)***	-.01	(.26)	-.03	(2.54)	-.06	(7.80)**	.09	(38.76)***
Pediatrics	-.04	(10.51)***	-.02	(1.21)	.06	(7.44)	-.20	(55.13)***	.03	(3.78)*
Physician Characteristics:										
Age	.000	(.96)	.001	(3.02)	-.000	(.48)	-.001	(.84)	.002	(12.95)***
Board Certification	-.01	(.58)	-.000	(.80)	.03	(5.57)**	.07	(16.57)***	-.05	(18.19)***
Solo Practice	-.01	(2.35)	-.02	(3.72)*	.02	(2.25)	-.02	(1.42)	.03	(9.42)**
Patient Characteristics:										
Age	.001	(34.48)***	.001	(2.65)	-.001	(8.83)**	-.000	(.07)	.001	(21.33)***
Sex (male=0, female=1)	-.003	(.27)	.01	(1.04)	.01	(.26)	.002	(.98)	-.002	(.51)
Multiple Conditions	-.01	(1.24)	.04	(8.51)**	-.01	(.44)	.06	(9.68)**	-.03	(4.57)*
Severity-Complexity	.03	(49.82)***	.05	(39.75)***	.01	(1.52)	.01	(1.95)	.01	(.54)
Urgency	.01	(7.33)**	.03	(11.59)***	.03	(16.99)***	.05	(18.04)***	.03	(23.13)***
Encounter Characteristics:										
Office Visit	-.04	(19.45)***	-.04	(5.76)**	-.03	(2.20)	.10	(16.15)***	.03	(3.25)
Professional Referral	.08	(12.41)***	-.02	(.18)	.02	(.25)	-.06	(1.34)	-.06	(3.59)*
Number of Visits	.003	(4.65)*	.001	(.30)	-.01	(4.88)*	-.01	(11.15)***	.01	(13.55)***
Geographic Characteristics:										
Northeast Region	-.01	(.32)	-.001	(.40)	.05	(6.44)**	.08	(10.33)***	-.05	(9.97)**
North Central Region	.03	(11.69)***	.09	(27.33)***	.05	(6.43)**	.03	(1.16)	-.01	(.31)
South Region	.003	(.14)	.05	(8.81)**	-.03	(3.30)	.08	(13.18)***	-.01	(.40)
SMSA Status	.01	(3.38)	.02	(3.43)	.01	(.51)	-.02	(1.50)	.004	(.18)
Joint F-statistics, geographic dummies removed	5.79***		9.87***		9.63***		5.12***		3.13*	
F-statistic	15.74***		10.10***		9.25***		11.63***		13.65***	
Adjusted R^2	.07		.04		.04				.06	
Mean of Dep. Var.	.03		.11		.14		.71		.09	

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*p<.05; **p<.01; ***p<.001

Table V-5-A (Continued)

Independent Variables	Referrals Coeff (F)
Constant	.05
Physician Specialty:	
Family Practice	.01 (.55)
Pediatrics	-.004 (.23)
Physician Characteristics:	
Age	.000 (.83)
Board Certification	-.004 (.47)
Solo Practice	-.000 (.002)
Patient Characteristics:	
Age	-.000 (.01)
Sex (male=0, female=1)	-.004 (.67)
Multiple Conditions	.01 (2.85)
Severity-Complexity	.01 (4.84)*
Urgency	-.002 (.31)
Encounter Characteristics:	
Office Visit	-.07 (70.44)***
Professional Referral	.08 (21.98)***
Number of Visits	.01 (27.76)***
Geographic Characteristics:	
Northeast Region	.02 (5.12)*
North Central Region	.02 (4.55)*
South Region	-.004 (.37)
SMSA Status	.000 (.36)
Joint F-statistics, geographic dummies removed	9.63***
F-statistic	10.38***
Adjusted R^2	.04
Mean of Dep. Var.	.02

*p<.05; **p<.01; ***p<.001

Table V-5-B

COEFFICIENTS FROM REGRESSION EQUATIONS PREDICTING COMPONENTS OF CARE FOR NASOPHARYNGITIS AND URI (ICDA=460 AND 465), INCLUDING GEOGRAPHIC VARIABLES, OFFICE FOLLOW-UP VISITS (N=368)

	Chest-X-ray		Laboratory Tests		Cultures		Systemic Drugs		Injection Other	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	-.12		-.04		.11		.55		-.43	
Physician Specialty:										
Family Practice	-.05	(2.18)	-.07	(1.87)	-.03	(.57)	-.12	(2.69)	.20	(12.26)***
Pediatrics	-.03	(.60)	-.12	(3.09)	.03	(.36)	-.08	(.79)	.12	(3.23)
Physician Characteristics:										
Age	.0011	(.29)	-.001	(.31)	-.001	(.26)	-.006	(4.51)*	.000	(.05)
Board Certification	.01	(.25)	.07	(2.43)	.02	(.68)	.07	(1.46)	-.02	(.24)
Solo Practice	-.03	(1.59)	.03	(.56)	.02	(.29)	-.01	(.47)	.09	(3.90)*
Patient Characteristics:										
Age	.002	(10.65)***	.001	(1.82)	-.001	(1.65)	.001	(.45)	.002	(4.96)
Sex (male=0, female=1)	-.04	(3.90)*	.02	(.38)	.01	(.14)	.03	(.31)	-.01	(.09)
Multiple Conditions	-.03	(1.46)	-.03	(.52)	.02	(.34)	.05	(.60)	-.04	(.70)
Severity-Complexity	.05	(7.75)	.09	(10.19)**	.003	(.03)	.09	(5.96)**	-.03	(1.09)
Urgency	.03	(3.29)	.01	(.05)	-.01	(.39)	.05	(1.97)	.11	(16.49)***
Encounter Characteristics:										
Office Visit	---		---		---		---		---	
Professional Referral	-.04	(.07)	-.19	(.55)	-.11	(.40)	-.66	(3.39)	.02	(.01)
Number of Visits	.001	(.16)	-.004	(1.48)	-.002	(.96)	-.01	(1.35)	.005	(1.85)
Geographic Characteristics:										
Northeast Region:	.01	(.65)	-.02	(.13)	.06	(1.69)	.09	(1.07)	.19	(8.26)**
North Central Region	.03	(.96)	.11	(3.45)	.06	(2.40)	-.02	(.70)	.17	(7.98)**
South Region	.002	(.32)	.06	(1.41)	-.01	(.11)	.05	(.56)	.19	(12.20)***
SMSA Status	.01	(.98)	.04	(.95)	-.01	(.21)	.06	(.80)	.02	(.11)
Joint F-statistics, geographic dummies removed	.38		1.56		1.70		.89		3.45**	
F-statistic	2.91***		2.20**		1.22		2.16**		3.90***	
Adjusted R^2	.08		.05		.01		.05		.11	
Mean of Dep. Var.	.05		.15		.06		.62		.18	

*p<.05; **p<.01; ***p<.001

Table V-5-B (Continued)

	Referrals	
Independent Variables	Coeff	(F)
Constant	-.72	
Physician Specialty:		
Family Practice	.01	(.16)
Pediatrics	-.01	(.20)
Physician Characteristics:		
Age	.001	(2.09)
Board Certification	.004	(.46)
Solo Practice	-.04	(4.01)*
Patient Characteristics:		
Age	-.000	(.55)
Sex (male=0, female=1)	-.01	(.20)
Multiple Conditions	.02	(.93)
Severity-Complexity	-.002	(.02)
Urgency	.01	(.59)
Encounter Characteristics:		
Office Visits	---	
Professional Referral	-.03	(.05)
Number of Visits	.06	(17.47)***
Geographic Characteristics:		
Northeast Region	.01	(.06)
North Central Region	.03	(1.20)
South Region	-.02	(.59)
SMSA Status	.02	(1.23)
Joint F-statistics, geographic dummies removed	1.50	
F-statistic	2.03**	
Adjusted R^2	.04	
Mean of Dep. Var.	.03	

*p<.05; **p<.01; ***p<.001

TABLE V-5-C

GEOGRAPHICAL BREAKDOWN
CONDITION; NASOPHARYNGITIS AND URI (ICDA = 460 and 465)
COMPONENT OF CARE; CHEST X-RAY

	Family Practice			Internal Medicine			Pediatrics			Emergency Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	2.3	(880)	(1756)	8.4	(308)	(651)	1.3	(506)	(1250)	22.7	(130)	(210)
SMSA	2.9	(525)	(1038)	9.2	(260)	(530)	.8	(435)	(1036)	25.5	(104)	(169)
Non-SMSA	1.5	(355)	(718)	3.8	(48)	(121)	4.9	(71)	(214)	11.2	(25)	(41)
Northeast	2.1	(134)	(216)	5.9	(82)	(134)	.2	(130)	(286)	16.0	(22)	(36)
SMSA	1.5	(120)	(193)	6.1	(79)	(127)	.2	(122)	(257)	16.4	(17)	(29)
Non-SMSA	7.4	(14)	(23)	.0	(3)	(7)	.0	(9)	(29)	14.4	(4)	(7)
North Central	4.7	(220)	(542)	10.1	(93)	(211)	4.7	(94)	(266)	34.9	(27)	(46)
SMSA	8.4	(103)	(249)	12.9	(66)	(152)	2.5	(82)	(218)	42.1	(23)	(37)
Non-SMSA	1.6	(117)	(293)	3.1	(27)	(59)	20.3	(12)	(48)	.0	(5)	(9)
South	1.3	(419)	(751)	10.7	(102)	(189)	.2	(184)	(427)	20.9	(54)	(87)
SMSA	1.8	(226)	(432)	11.1	(91)	(153)	.0	(150)	(333)	23.0	(45)	(74)
Non-SMSA	.8	(193)	(319)	7.6	(11)	(36)	1.0	(34)	(94)	10.9	(9)	(13)
West	1.4	(107)	(247)	2.4	(32)	(117)	1.9	(98)	(271)	19.3	(27)	(41)
SMSA	.6	(76)	(164)	2.3	(25)	(98)	1.3	(81)	(228)	20.3	(19)	(29)
Non-SMSA	3.2	(31)	(83)	2.6	(7)	(19)	4.6	(17)	(43)	16.8	(7)	(12)

TABLE V-5-D

GEOGRAPHICAL BREAKDOWN
CONDITION: NASOPHARYNGITIS AND URI (ICDA = 460 and 465)
COMPONENT OF CARE: LABORATORY TESTS

	Family Medicine			Internal Medicine			Pediatrics			Emergency Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	10.9	(880)	(1756)	14.0	(308)	(651)	9.3	(506)	(1250)	14.7	(130)	(210)
SMSA	11.9	(525)	(1038)	15.2	(260)	(530)	9.1	(435)	(1036)	14.2	(104)	(169)
Non-SMSA	9.4	(355)	(718)	7.5	(48)	(121)	10.7	(71)	(214)	16.6	(25)	(41)
Northeast	6.8	(134)	(216)	12.7	(82)	(134)	4.5	(130)	(286)	2.9	(22)	(36)
SMSA	7.4	(120)	(193)	13.2	(79)	(127)	4.6	(122)	(257)	3.6	(17)	(29)
Non-SMSA	1.7	(14)	(23)	.0	(3)	(7)	2.3	(9)	(29)	.0	(4)	(7)
North Central	18.1	(220)	(542)	15.9	(93)	(211)	14.4	(94)	(266)	22.9	(27)	(46)
SMSA	24.1	(103)	(249)	20.9	(66)	(152)	15.9	(82)	(218)	23.1	(23)	(37)
Non-SMSA	12.3	(117)	(293)	4.0	(27)	(59)	3.5	(12)	(48)	21.7	(5)	(9)
South	8.7	(419)	(751)	16.4	(102)	(189)	12.9	(184)	(427)	20.2	(54)	(87)
SMSA	10.4	(226)	(432)	16.0	(91)	(153)	11.8	(150)	(333)	18.5	(45)	(74)
Non-SMSA	6.7	(193)	(319)	19.9	(11)	(36)	18.1	(34)	(94)	28.6	(9)	(13)
West	9.9	(107)	(247)	3.6	(32)	(117)	4.0	(98)	(271)	4.7	(27)	(41)
SMSA	7.2	(76)	(164)	3.1	(25)	(98)	3.7	(81)	(228)	3.2	(19)	(29)
Non-SMSA	16.7	(31)	(83)	5.2	(7)	(19)	5.4	(17)	(43)	8.4	(7)	(12)

TABLE V-5-E

GEOGRAPHICAL BREAKDOWN
CONDITION: NASOPHARYNGITIS AND URI (ICDA = 460 and 465)
COMPONENT OF CARE: CULTURES

	Family Practice			Internal Medicine			Pediatrics			Emergency Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	6.5	(880)	(1756)	11.8	(308)	(651)	21.5	(506)	(1250)	12.7	(130)	(210)
SMSA	7.3	(525)	(1038)	13.8	(260)	(530)	21.3	(435)	(1036)	13.2	(104)	(169)
Non-SMSA	5.2	(355)	(718)	2.3	(48)	(121)	23.2	(71)	(214)	10.8	(25)	(41)
Northeast	7.4	(134)	(216)	17.3	(82)	(134)	28.8	(130)	(286)	13.9	(22)	(36)
SMSA	8.2	(120)	(193)	17.2	(79)	(127)	28.0	(122)	(257)	17.3	(17)	(29)
Non-SMSA	.0	(14)	(23)	20.1	(3)	(7)	39.7	(9)	(29)	.0	(4)	(7)
North Central	9.9	(220)	(542)	9.7	(93)	(211)	26.7	(94)	(266)	7.8	(27)	(46)
SMSA	7.8	(103)	(249)	13.7	(66)	(152)	27.2	(82)	(218)	7.2	(23)	(37)
Non-SMSA	11.8	(117)	(293)	.0	(27)	(59)	23.6	(12)	(48)	10.8	(5)	(9)
South	3.6	(419)	(751)	9.7	(102)	(189)	17.4	(184)	(427)	15.5	(54)	(87)
SMSA	5.1	(226)	(432)	10.9	(91)	(153)	16.8	(150)	(333)	16.5	(45)	(74)
Non-SMSA	1.9	(193)	(319)	.0	(11)	(36)	20.4	(34)	(94)	10.9	(9)	(13)
West	9.4	(107)	(247)	10.5	(32)	(117)	14.6	(98)	(271)	11.2	(27)	(41)
SMSA	11.8	(76)	(164)	11.6	(25)	(98)	13.4	(81)	(228)	9.0	(19)	(29)
Non-SMSA	3.4	(31)	(83)	7.0	(7)	(19)	20.1	(17)	(43)	16.8	(7)	(12)

TABLE V-5-F

GEOGRAPHICAL BREAKDOWN
CONDITION: NASOPHARYNGITIS AND URI (ICDA = 460 and 465)
COMPONENT OF CARE: SYSTEMIC DRUGS

	Family Practice			Internal Medicine			Pediatrics			Emergency Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	73.4	(880)	(1756)	76.0	(308)	(651)	61.2	(506)	(1250)	48.8	(130)	(210)
SMSA	73.2	(525)	(1038)	74.4	(260)	(530)	60.0	(435)	(1036)	46.3	(104)	(169)
Non-SMSA	73.8	(355)	(718)	84.8	(48)	(121)	68.9	(71)	(214)	59.0	(25)	(41)
Northeast	72.6	(134)	(216)	81.3	(82)	(134)	65.0	(130)	(286)	46.8	(22)	(36)
SMSA	72.3	(120)	(193)	81.9	(79)	(127)	65.7	(122)	(257)	44.9	(17)	(29)
Non-SMSA	75.8	(14)	(23)	66.0	(3)	(7)	54.3	(9)	(29)	54.8	(4)	(7)
North Central	73.7	(220)	(542)	72.5	(93)	(211)	56.9	(94)	(266)	59.3	(27)	(46)
SMSA	72.2	(103)	(249)	65.2	(66)	(152)	57.8	(82)	(218)	53.2	(23)	(37)
Non-SMSA	75.1	(117)	(293)	90.2	(27)	(59)	50.1	(12)	(48)	89.2	(5)	(9)
South	73.9	(419)	(751)	73.3	(102)	(189)	63.0	(184)	(427)	44.4	(54)	(87)
SMSA	74.1	(226)	(432)	71.8	(91)	(153)	59.0	(150)	(333)	42.7	(45)	(74)
Non-SMSA	73.6	(193)	(319)	85.4	(11)	(36)	80.7	(34)	(94)	52.7	(9)	(13)
West	72.0	(107)	(247)	81.3	(32)	(117)	57.1	(98)	(271)	48.7	(27)	(41)
SMSA	73.2	(76)	(164)	84.3	(25)	(98)	55.2	(81)	(228)	48.0	(19)	(29)
Non-SMSA	69.2	(31)	(83)	71.3	(7)	(19)	65.9	(17)	(43)	50.4	(7)	(12)

TABLE V-5-G

GEOGRAPHICAL BREAKDOWN
CONDITION: NASOPHARYNGITIS AND URI (ICDA = 460 and 465)
COMPONENT OF CARE: INJECTION OTHER

	Family Practice			Internal Medicine			Pediatrics			Emergency Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	13.8	(880)	(1756)	7.1	(308)	(651)	4.0	(506)	(1250)	7.7	(130)	(210)
SMSA	14.0	(525)	(1038)	6.7	(260)	(530)	4.0	(435)	(1036)	5.4	(104)	(169)
Non-SMSA	13.5	(355)	(718)	8.8	(48)	(120)	3.9	(71)	(214)	17.1	(25)	(41)
Northeast	7.4	(134)	(216)	3.9	(82)	(134)	2.4	(130)	(286)	8.0	(22)	(36)
SMSA	8.3	(120)	(193)	4.0	(79)	(127)	2.3	(122)	(257)	3.4	(17)	(29)
Non-SMSA	.0	(14)	(23)	.0	(3)	(7)	3.9	(9)	(29)	26.0	(4)	(7)
North Central	15.3	(220)	(542)	13.3	(93)	(211)	1.5	(94)	(266)	7.4	(27)	(46)
SMSA	19.5	(103)	(249)	17.3	(66)	(152)	1.7	(82)	(218)	8.9	(23)	(37)
Non-SMSA	11.6	(117)	(293)	3.7	(27)	(59)	.0	(12)	(48)	.0	(5)	(9)
South	16.2	(419)	(751)	5.1	(102)	(189)	4.4	(184)	(427)	7.0	(54)	(87)
SMSA	17.0	(226)	(432)	2.5	(91)	(153)	4.6	(150)	(333)	4.0	(45)	(74)
Non-SMSA	15.2	(193)	(319)	26.8	(11)	(36)	3.7	(34)	(94)	21.8	(9)	(13)
West	9.3	(107)	(247)	3.2	(32)	(117)	7.5	(98)	(271)	9.3	(27)	(41)
SMSA	6.7	(76)	(164)	2.8	(25)	(98)	7.6	(81)	(228)	6.4	(19)	(29)
Non-SMSA	15.3	(31)	(83)	4.4	(7)	(19)	6.8	(17)	(43)	16.8	(7)	(12)

TABLE V-5-H

GEOGRAPHICAL BREAKDOWN
CONDITION: NASOPHARYNGITIS AND URI (ICDA = 460 and 465)
COMPONENT OF CARE: REFERRAL

	Family Practice			Internal Medicine			Pediatrics			Emergency Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	1.9	(857)	(1688)	4.0	(290)	(613)	2.1	(485)	(1191)	36.8	(126)	(204)
SMSA	2.5	(511)	(1010)	3.0	(245)	(499)	2.2	(420)	(990)	36.5	(101)	(165)
Non-SMSA	1.2	(346)	(678)	9.0	(46)	(114)	1.8	(65)	(201)	38.2	(24)	(39)
Northeast	4.0	(133)	(213)	7.5	(74)	(120)	3.3	(128)	(280)	34.1	(19)	(32)
SMSA	4.4	(120)	(190)	7.7	(72)	(114)	3.4	(120)	(253)	40.8	(14)	(25)
Non-SMSA	.0	(14)	(23)	.0	(2)	(6)	2.5	(8)	(27)	11.6	(4)	(7)
North Central	3.7	(211)	(506)	4.5	(85)	(192)	1.7	(90)	(251)	47.2	(27)	(46)
SMSA	4.9	(100)	(241)	1.2	(58)	(135)	1.7	(78)	(204)	45.2	(23)	(37)
Non-SMSA	2.5	(111)	(265)	11.5	(27)	(57)	1.8	(11)	(47)	56.7	(5)	(9)
South	.5	(416)	(742)	2.0	(101)	(186)	1.3	(179)	(411)	34.3	(54)	(87)
SMSA	.4	(224)	(426)	1.1	(91)	(153)	1.6	(146)	(321)	29.0	(45)	(74)
Non-SMSA	.5	(193)	(316)	10.1	(10)	(33)	.0	(32)	(90)	60.5	(9)	(13)
West	1.4	(97)	(227)	.6	(31)	(115)	2.6	(88)	(249)	33.1	(25)	(39)
SMSA	2.0	(67)	(153)	.8	(24)	(97)	2.0	(75)	(212)	40.5	(19)	(29)
Non-SMSA	.0	(29)	(74)	.0	(7)	(18)	5.8	(13)	(37)	10.0	(6)	(10)

TABLE V-5-I

GEOGRAPHICAL BREAKDOWN
CONDITION: NASOPHARYNGITIS AND URI (ICDA = 460 and 465)
COMPONENT OF CARE: VISIT DURATION

	Family Practice			Internal Medicine			Pediatrics			Emergency Medicine		
	Minutes	n (w)	n	Minutes	n (w)	n	Minutes	n (w)	n	Minutes	n (w)	n
U.S. Total	8.6	(825)	(1594)	12.0	(301)	(630)	10.3	(481)	(1182)	16.4	(121)	(196)
SMSA	9.0	(483)	(918)	12.2	(253)	(510)	10.1	(415)	(983)	18.0	(97)	(158)
Non-SMSA	8.1	(342)	(676)	11.2	(48)	(120)	11.0	(66)	(199)	9.7	(24)	(38)
Northeast	10.2	(128)	(202)	11.1	(79)	(127)	10.2	(127)	(280)	12.9	(16)	(27)
SMSA	10.1	(115)	(179)	11.2	(76)	(120)	10.2	(119)	(251)	14.2	(12)	(21)
Non-SMSA	10.5	(14)	(23)	8.6	(3)	(7)	9.6	(9)	(29)	8.5	(4)	(6)
North Central	9.0	(215)	(523)	11.5	(91)	(202)	10.2	(87)	(246)	16.3	(26)	(45)
SMSA	9.3	(102)	(245)	11.8	(64)	(144)	10.6	(76)	(202)	18.2	(22)	(36)
Non-SMSA	8.7	(113)	(278)	10.7	(27)	(58)	7.7	(11)	(44)	7.3	(5)	(9)
South	7.7	(387)	(651)	13.3	(99)	(185)	10.5	(175)	(402)	20.7	(54)	(87)
SMSA	8.0	(200)	(352)	13.4	(88)	(149)	10.2	(145)	(318)	22.7	(45)	(74)
Non-SMSA	7.4	(187)	(299)	12.3	(11)	(36)	11.8	(30)	(84)	11.0	(9)	(13)
West	9.6	(95)	(218)	12.0	(32)	(116)	9.7	(92)	(254)	9.1	(24)	(37)
SMSA	9.7	(66)	(142)	11.7	(24)	(97)	9.5	(76)	(212)	8.7	(18)	(27)
Non-SMSA	9.3	(29)	(76)	12.7	(7)	(19)	12.1	(17)	(42)	10.2	(6)	(10)

Table V-6-A

COEFFICIENTS FROM REGRESSION EQUATIONS PREDICTING COMPONENTS OF CARE FOR LOW BACK PAIN (ICDA = Various), INCLUDING GEOGRAPHIC VARIABLES, TOTAL VISITS (N=1961)

	X-ray (non-chest)		Counseling		Hospital-zation		Referral	
Independent Variable	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	-.10		.39		.38		.11	
Physician Specialty:								
Family Practice	-.08	(5.39)*	-.02	(.37)	-.02	(.64)	-.10	(13.97)***
Orthopedics	.05	(3.28)	-.05	(2.37)	.02	(1.50)	-.09	(14.93)***
Physician Characteristics:								
Age	.002	(4.32)*	-.003	(8.75)**	-.000	(.01)	.001	(.80)
Board Certification	.003	(.01)	.03	(.97)	.04	(6.98)**	-.001	(.001)
Solo Practice	-.02	(.80)	-.01	(.06)	.001	(.005)	-.000	(.000)
Patient Characteristics:								
Age	-.000	(.58)	-.000	(.30)	.001	(1.95)	-.000	(.07)
Sex (male=0, female=1)	-.05	(6.29)**	-.003	(.02)	.02	(2.79)	-.03	(3.29)
Multiple Conditions	-.04	(2.77)	.04	(2.19)	.05	(9.15)**	.01	(.30)
Severity-Complexity	.10	(55.53)***	.01	(.69)	.02	(4.66)*	.04	(15.01)***
Urgency	.04	(10.51)***	-.002	(.04)	.05	(39.73)***	-.01	(.37)
Encounter Characteristics:								
Office Visit	.11	(22.80)***	-.11	(24.50)***	-.65	(1850.69)***	-.07	(12.42)***
Professional Referral	-.01	(.31)	-.06	(5.17)*	.04	(5.40)*	.10	(23.58)***
Number of Visits	-.01	(18.97)***	-.001	(.85)	.001	(.37)	-.001	(.24)
Geographic Characteristics:								
Northeast Region	-.01	(.10)	.12	(11.57)***	.01	(.19)	.05	(2.69)
North Central	-.01	(.12)	.04	(1.95)	.03	(3.65)*	.01	(.64)
South Region	-.01	(.27)	.09	(9.67)**	.04	(4.33)*	.001	(.002)
SMSA Status	.03	(.124)	-.05	(4.28)*	.01	(.54)	.07	(10.82)***
Joint F-statistics, geographic dummies removed	.42		5.21***		1.51		3.71**	
F-statistic	10.68***		4.23***		149.96***		6.54***	
Adjusted R^2	.08		.08		.56		.05	
Mean of Dep. Var.	.30		.31		.28		.17	

*p<.05; **p<.01; ***p<.001

Table V-6-B

COEFFICIENTS FROM REGRESSION EQUATIONS PREDICTING COMPONENTS OF CARE FOR LOW BACK PAIN (ICDA = Various), INCLUDING GEOGRAPHIC VARIABLES, OFFICE FOLLOW-UP VISITS (N=638)

Independent Variable	X-ray (non-chest)		Counseling		Hospitalization		Referral	
	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	-.07		.59		.01		.07	
Physician Specialty:								
Family Practice	-.15	(5.15)*	-.08	(1.26)	-.02	(.88)	.09	(3.09)
Orthopedics	-.05	(.66)	-.03	(.24)	.02	(.47)	-.04	(.85)
Physician Characteristics:								
Age	.001	(.55)	-.004	(4.54)*	-.000	(.03)	-.02	(2.43)
Board Certification	-.02	(.17)	-.02	(.12)	-.01	(.19)	-.05	(1.83)
Solo Practice	-.04	(1.03)	-.01	(.05)	-.02	(1.44)	.002	(.005)
Patient Characteristics:								
Age	.001	(.71)	-.001	(1.02)	-.000	(.10)	.000	(.02)
Sex (male=0, female=1)	-.001	(.001)	-.04	(1.19)	.002	(.02)	-.06	(4.32)*
Multiple Conditions	-.03	(.41)	.02	(.26)	.01	(.72)	.02	(.45)
Severity-Complexity	.09	(17.03)***	.02	(.54)	.004	(.002)	.04	(5.17)*
Urgency	.05	(4.32)*	-.001	(.003)	.02	(6.28)*	.03	(2.28)
Encounter Characteristics:								
Office Visit	---		---		---		---	
Professional Referral	.08	(2.96)	-.04	(.59)	-.01	(.22)	.05	(1.74)
Number of Visits	-.004	(3.46)	-.001	(.25)	-.001	(2.49)	-.000	(.06)
Geographic Characteristics:								
Northeast Region	-.05	(.89)	.21	(11.44)***	.02	(.52)	-.003	(.004)
North Central Region	-.02	(.15)	.02	(.10)	.01	(.30)	.08	(4.60)*
South Region	.002	(.002)	.17	(11.80)***	.02	(1.30)	.07	(3.87)*
SMSA Status	.06	(1.60)	-.06	(1.56)	-.02	(1.41)	.10	(7.35)**
Joint F-statistics, geographic dummies removed	.69		6.13***		.86		3.33**	
F-statistic	3.23***		2.17**		1.12		2.38**	
Adjusted R^2	.05		.03		.00		.03	
Mean of Dep. Var.	.25		.36		.03		.14	

*p<.05; **p<.01; ***p<.001

TABLE V-6-C

GEOGRAPHICAL BREAKDOWN
CONDITION: LOWER BACK PAIN (ICDA = Various)
COMPONENT OF CARE: X-RAY (Non-chest)

	Family Practice			Internal Medicine			Orthopedic Surgery			Emergency Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	22.2	(285)	(563)	28.7	(163)	(392)	33.5	(902)	(1210)	61.8	(111)	(186)
SMSA	22.5	(190)	(373)	28.5	(143)	(334)	34.4	(745)	(992)	65.3	(95)	(160)
Non-SMSA	21.7	(95)	(190)	29.9	(20)	(58)	28.9	(157)	(218)	41.0	(16)	(26)
Northeast	30.5	(39)	(56)	41.2	(40)	(74)	35.0	(138)	(170)	55.6	(16)	(27)
SMSA	33.3	(31)	(44)	20.3	(39)	(69)	36.1	(117)	(141)	72.2	(9)	(17)
Non-SMSA	18.9	(7)	(12)	42.2	(1)	(5)	28.9	(21)	(29)	31.2	(6)	(10)
North Central	16.5	(68)	(151)	34.8	(63)	(158)	27.5	(191)	(263)	81.6	(31)	(53)
SMSA	20.0	(35)	(83)	34.5	(52)	(125)	27.5	(158)	(219)	81.6	(28)	(48)
Non-SMSA	12.9	(33)	(68)	36.5	(11)	(33)	27.4	(33)	(44)	80.9	(3)	(5)
South	21.8	(119)	(231)	20.0	(31)	(74)	34.0	(328)	(440)	55.4	(36)	(61)
SMSA	23.4	(84)	(154)	22.7	(26)	(57)	35.6	(254)	(336)	59.7	(32)	(54)
Non-SMSA	18.0	(36)	(77)	7.3	(5)	(17)	28.4	(74)	(104)	26.4	(5)	(7)
West	24.2	(60)	(125)	35.2	(29)	(86)	36.5	(245)	(337)	52.1	(28)	(45)
SMSA	14.5	(40)	(92)	34.5	(26)	(83)	37.2	(215)	(296)	52.0	(26)	(41)
Non-SMSA	44.6	(19)	(33)	43.1	(2)	(3)	32.1	(30)	(41)	52.5	(2)	(4)

TABLE V-6-D

GEOGRAPHICAL BREAKDOWN
CONDITION: LOWER BACK PAIN (ICDA = Various)
COMPONENT OF CARE: COUNSELING

	Family Practice			Internal Medicine			Orthopedic Surgery			Emergency Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	36.9	(285)	(563)	31.5	(163)	(392)	28.2	(902)	(1210)	9.8	(111)	(186)
SMSA	39.3	(190)	(373)	31.7	(143)	(334)	25.2	(745)	(992)	9.4	(95)	(160)
Non-SMSA	32.1	(95)	(190)	30.3	(20)	(58)	42.7	(157)	(218)	11.9	(16)	(26)
Northeast	53.7	(39)	(56)	32.3	(40)	(74)	35.0	(138)	(170)	9.0	(16)	(27)
SMSA	57.3	(31)	(44)	33.3	(39)	(69)	29.8	(117)	(141)	.0	(9)	(17)
Non-SMSA	38.3	(7)	(12)	.0	(1)	(5)	63.9	(21)	(29)	22.1	(6)	(10)
North Central	33.3	(68)	(151)	28.0	(63)	(158)	26.2	(191)	(263)	5.7	(31)	(53)
SMSA	47.9	(35)	(83)	25.2	(52)	(125)	21.9	(158)	(219)	4.4	(28)	(48)
Non-SMSA	17.8	(33)	(68)	41.1	(11)	(33)	47.3	(33)	(44)	19.1	(3)	(5)
South	35.4	(119)	(231)	30.9	(31)	(74)	33.5	(328)	(440)	14.8	(36)	(61)
SMSA	33.8	(84)	(154)	31.6	(26)	(57)	29.9	(254)	(336)	17.0	(32)	(54)
Non-SMSA	39.0	(36)	(77)	27.9	(5)	(17)	45.9	(74)	(104)	.0	(5)	(7)
West	33.1	(60)	(125)	38.9	(29)	(86)	18.9	(245)	(337)	8.2	(28)	(45)
SMSA	29.1	(40)	(92)	42.3	(26)	(83)	19.5	(215)	(296)	9.0	(26)	(41)
Non-SMSA	41.4	(19)	(33)	.0	(2)	(3)	14.7	(30)	(41)	.0	(2)	(4)

TABLE V-6-E

GEOGRAPHICAL BREAKDOWN
CONDITION: LOWER BACK PAIN (ICDA = Various)
COMPONENT OF CARE: HOSPITALIZATION

	Family Practice			Internal Medicine			Orthopedic Surgery			Emergency Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	18.6	(271)	(537)	27.0	(156)	(377)	31.7	(886)	(1190)	5.2	(111)	(185)
SMSA	20.1	(177)	(354)	25.3	(137)	(321)	31.8	(730)	(973)	6.1	(94)	(159)
Non-SMSA	15.9	(94)	(183)	39.4	(19)	(56)	31.2	(156)	(217)	.0	(16)	(26)
Northeast	27.4	(39)	(56)	24.9	(38)	(70)	24.7	(134)	(165)	10.6	(16)	(27)
SMSA	24.3	(31)	(44)	24.1	(37)	(66)	26.3	(113)	(136)	17.8	(9)	(17)
Non-SMSA	41.0	(7)	(12)	57.3	(1)	(4)	16.1	(21)	(29)	.0	(6)	(10)
North Central	24.7	(67)	(149)	27.3	(61)	(152)	38.4	(190)	(261)	4.0	(31)	(53)
SMSA	26.1	(34)	(81)	19.8	(49)	(119)	41.1	(157)	(217)	4.4	(28)	(48)
Non-SMSA	23.3	(33)	(68)	60.7	(11)	(33)	25.1	(33)	(44)	.0	(3)	(5)
South	17.3	(113)	(223)	25.1	(30)	(72)	37.5	(325)	(436)	3.1	(36)	(61)
SMSA	20.2	(78)	(148)	28.7	(25)	(56)	36.0	(252)	(333)	3.6	(32)	(54)
Non-SMSA	10.9	(35)	(75)	6.5	(5)	(16)	42.5	(73)	(103)	.0	(5)	(7)
West	7.2	(52)	(109)	31.4	(28)	(83)	22.2	(237)	(328)	6.2	(28)	(44)
SMSA	9.9	(34)	(81)	34.2	(26)	(80)	22.5	(207)	(287)	6.7	(25)	(40)
Non-SMSA	2.1	(18)	(28)	.0	(2)	(3)	20.6	(30)	(41)	.0	(2)	(4)

TABLE V-6-F

GEOGRAPHICAL BREAKDOWN
CONDITION: LOWER BACK PAIN (ICDA = Various)
COMPONENT OF CARE: REFERRAL

	Family Practice			Internal Medicine			Orthopedic Surgery			Emergency Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	11.0	(269)	(535)	25.9	(153)	(373)	17.1	(855)	(1153)	62.1	(109)	(183)
SMSA	13.1	(177)	(353)	26.5	(134)	(317)	18.6	(699)	(936)	63.9	(93)	(157)
Non-SMSA	6.9	(93)	(182)	22.0	(19)	(56)	10.4	(156)	(217)	51.6	(16)	(26)
Northeast	12.1	(39)	(56)	36.3	(37)	(69)	20.8	(134)	(165)	60.4	(16)	(27)
SMSA	13.7	(31)	(44)	37.2	(36)	(65)	19.5	(113)	(136)	69.7	(9)	(17)
Non-SMSA	5.2	(7)	(12)	.0	(1)	(4)	27.4	(21)	(29)	46.7	(6)	(10)
North Central	13.8	(66)	(147)	21.4	(59)	(150)	16.7	(187)	(256)	64.5	(30)	(52)
SMSA	23.9	(33)	(79)	20.0	(48)	(117)	19.4	(154)	(212)	66.5	(27)	(47)
Non-SMSA	3.6	(33)	(68)	27.4	(11)	(33)	4.3	(33)	(44)	42.8	(3)	(5)
South	9.6	(113)	(223)	8.6	(30)	(72)	18.7	(320)	(429)	60.7	(35)	(60)
SMSA	9.3	(78)	(148)	9.6	(25)	(56)	22.2	(247)	(326)	57.9	(31)	(53)
Non-SMSA	10.2	(35)	(75)	3.9	(5)	(16)	6.8	(73)	(103)	78.7	(5)	(7)
West	9.5	(52)	(109)	41.1	(27)	(82)	12.8	(214)	(303)	62.2	(28)	(44)
SMSA	10.7	(35)	(82)	40.9	(25)	(79)	12.6	(185)	(262)	66.1	(25)	(40)
Non-SMSA	7.2	(17)	(27)	43.1	(2)	(3)	14.0	(30)	(41)	21.2	(2)	(4)

TABLE V-6-G

GEOGRAPHICAL BREAKDOWN
CONDITION: LOWER BACK PAIN (ICDA = Various)
COMPONENT OF CARE: VISIT DURATION

	Family Practice			Internal Medicine			Orthopedic Surgery			Emergency Medicine		
	Minutes	n (w)	n	Minutes	n (w)	n	Minutes	n (w)	n	Minutes	n (w)	n
U.S. Total	12.0	(249)	(492)	16.5	(153)	(373)	12.9	(811)	(1096)	16.5	(100)	(168)
SMSA	12.1	(159)	(318)	16.7	(135)	(321)	13.2	(670)	(900)	17.1	(84)	(142)
Non-SMSA	11.7	(90)	(174)	14.8	(18)	(52)	11.7	(142)	(196)	13.9	(16)	(26)
Northeast	11.9	(39)	(56)	18.2	(38)	(70)	11.4	(120)	(149)	13.5	(15)	(26)
SMSA	12.2	(31)	(44)	18.4	(37)	(66)	11.6	(100)	(121)	15.5	(9)	(16)
Non-SMSA	10.7	(7)	(12)	7.4	(1)	(4)	10.1	(20)	(28)	10.6	(6)	(10)
North Central	10.0	(66)	(146)	14.8	(59)	(150)	11.4	(168)	(236)	17.8	(26)	(46)
SMSA	9.7	(33)	(80)	15.1	(48)	(117)	11.0	(138)	(195)	17.8	(23)	(41)
Non-SMSA	10.3	(33)	(66)	13.6	(11)	(33)	12.9	(30)	(41)	17.6	(3)	(5)
South	10.7	(93)	(185)	16.9	(28)	(67)	11.9	(290)	(386)	17.9	(33)	(55)
SMSA	11.7	(61)	(119)	17.5	(24)	(55)	12.2	(227)	(299)	18.1	(28)	(48)
Non-SMSA	8.8	(32)	(66)	13.3	(4)	(12)	10.8	(63)	(87)	16.7	(5)	(7)
West	16.8	(52)	(105)	17.3	(29)	(86)	16.0	(234)	(325)	15.4	(26)	(41)
SMSA	15.1	(33)	(75)	16.5	(26)	(83)	16.3	(205)	(285)	15.6	(23)	(37)
Non-SMSA	19.8	(19)	(30)	25.6	(2)	(3)	13.7	(29)	(40)	13.2	(2)	(4)

Table V-7-A

COEFFICIENTS FROM REGRESSION EQUATIONS PREDICTING COMPONENTS OF CARE FOR PNEUMONIA (ICDA=480-486), INCLUDING GEOGRAPHIC VARIABLES, TOTAL VISITS (N=3086)

	Chest X-ray		Laboratory Tests		Cultures		Systemic Drugs		Injection Other	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	.01		-.17		-.01		.32		-.30	
Physician Specialty:										
Family Practice	-.08	(10.20)**	-.01	(.21)	-.11	(25.08)***	-.13	(18.85)***	.03	(2.07)
Pediatrics	-.03	(82.11)***	-.04	(1.67)	-.04	(2.35)	-.09	(5.10)*	.05	(4.07)*
Physician Characteristics:										
Age	.000	(.02)	.001	(1.05)	-.001	(1.72)	-.001	(.78)	.002	(12.22)***
Board Certification	-.04	(5.58)*	-.05	(8.52)**	-.01	(.13)	.01	(.15)	-.06	(27.42)***
Solo Practice	-.03	(3.44)	-.04	(6.72)*	.01	(.92)	.004	(.03)	.03	(6.91)**
Patient Characteristics:										
Age	-.001	(3.14)	-.002	(.19)	-.001	(2.61)	-.000	(.04)	.001	(4.93)*
Sex (male=0, female=1)	-.01	(.87)	-.61	(.37)	.02	(1.91)	-.02	(1.45)	-.01	(.76)
Multiple Conditions	-.07	(16.59)***	-.02	(1.80)	.03	(5.50)*	.04	(4.21)*	-.01	(1.45)
Severity-Complexity	.11	(70.07)***	.10	(60.10)***	.04	(14.31)***	.03	(3.14)	.04	(14.40)***
Urgency	.11	(120.57)	.08	(71.10)***	.05	(36.06)***	.08	(46.94)***	.07	(84.21)***
Encounter Characteristics:										
Office Visit	-.01	(.08)	-.08	(17.09)***	-.06	(15.50)***	.09	(14.78)***	-.01	(.82)
Professional Referral	-.01	(.07)	.02	(.93)	.04	(3.53)	-.09	(10.04)**	.03	(3.20)
Number of Visits	-.002	(1.10)	-.005	(8.44)**	-.004	(7.46)**	-.01	(13.62)***	.001	(1.05)
Geographic Characteristics:										
Northeast Region	-.03	(1.10)	.01	(.11)	.02	(.75)	.02	(.34)	.003	(.03)
North Central Region	.07	(8.91)**	.08	(13.41)***	.01	(.17)	.04	(1.82)	-.01	(.22)
South Region	-.001	(.002)	.05	(7.02)**	.01	(.19)	.08	(11.04)***	.07	(18.73)***
SMSA Status	.03	(2.96)	.04	(5.33)*	.06	(14.85)***	.08	(13.83)***	.04	(10.29)***
Joint F-statistics, geographic dummies removed	5.70***		5.32***		4.00**		6.06***		11.48***	
F-statistic	52.48***		26.99***		14.48***		9.77***		19.62***	
Adjusted R^2	.22		.13		.07		.05		.09	
Mean of Dep. Var.	.29		.21		.15		.62		.10	

*p<.05; **p<.01; ***p<.001

Table V-7-A (Continued)

	Referral	
Independent Variables	Coeff	(F)
Constant	-.01	
Physician Specialty:		
Family Practice	-.002	(.02)
Pediatrics	-.03	(2.81)
Physician Characteristics:		
Age	-.001	(3.04)
Board Certification	-.02	(3.06)
Solo Practice	.01	(1.81)
Patient Characteristics:		
Age	-.001	(3.37)
Sex (male=0, female=1)	-.001	(.42)
Multiple Conditions	.03	(11.64)**
Severity-Complexity	.01	(1.42)
Urgency	.04	(45.17)***
Encounter Characteristics:		
Office Visit	-.02	(3.18)
Professional Referral	.14	(97.01)***
Number of Visits	.005	(19.91)***
Geographic Characteristics:		
Northeast Region	-.005	(.10)
North Central Region	-.03	(5.77)*
South Region	-.03	(6.02)*
SMSA Status	.02	(3.91)*
Joint F-statistics, geographic dummies removed	4.04**	
F-statistic	23.58***	
Adjusted R^2	.11	
Mean of Dep. Var.	.06	

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*p<.05; **p<.01; ***p<.001

Table V-7-B

COEFFICIENTS FROM REGRESSION EQUATIONS PREDICTING COMPONENTS OF CARE FOR PNEUMONIA (ICDA=480-486), INCLUDING GEOGRAPHIC VARIABLES, FIRST HOSPITAL VISIT (N=255)

Independent Variables	Chest X-ray		Laboratory Tests		Cultures		Systemic Drugs		Injection Other	
	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	-.07		-.66		-.21		.28		-.45	
Physician Specialty:										
Family Practice	-.23	(5.34)**	-.11	(1.46)	-.18	(3.91)*	-.21	(4.57)*	-.14	(4.04)*
Pediatrics	-.17	(2.17)	-.06	(.29)	-.04	(.13)	-.28	(5.75)**	-.07	(.63)
Physician Characteristics:										
Age	-.001	(.11)	.01	(6.22)**	-.002	(.28)	.001	(.07)	-.000	(.004)
Board Certification	.01	(.02)	-.13	(3.99)*	.01	(.04)	-.04	(.27)	-.005	(.01)
Solo Practice	-.08	(1.11)	-.18	(5.82)**	-.07	(.89)	-.06	(.51)	.07	(1.29)
Patient Characteristics:										
Age	-.002	(1.65)	-.002	(1.21)	-.002	(1.20)	-.001	(.16)	-.000	(.12)
Sex (male=0, female=1)	.03	(.18)	-.04	(.38)	.09	(2.51)	.01	(.04)	.02	(.17)
Multiple Conditions	-.05	(.55)	-.03	(.29)	.02	(.08)	.16	(.06)	.04	(.63)
Severity-Complexity	.20	(12.84)***	.18	(11.02)***	.14	(7.32)**	.08	(2.06)	.01	(.11)
Urgency	.10	(5.81)**	.11	(7.66)**	.09	(5.31)*	.11	(6.52)**	.15	(24.70)***
Encounter Characteristics:										
Office Visit	---		---		---		---		---	
Professional Referral	-.07	(.98)	-.002	(.001)	.07	(1.22)	-.06	(.81)	.003	(.003)
Number of Visits	---		---		---		---		---	
Geographic Characteristics:										
Northeast Region	.004	(.001)	.07	(.46)	.11	(1.24)	-.16	(2.06)	.05	(.54)
North Central Region	.01	(.01)	.12	(1.58)	.01	(.02)	-.06	(.41)	.15	(3.94)*
South Region	-.10	(1.18)	.02	(.04)	-.07	(.63)	-.13	(1.61)	.15	(3.94)*
SMSA Status	.14	(3.88)*	.19	(7.74)**	.05	(.49)	.03	(.13)	.005	(.01)
Joint F-statistics, geographic dummies removed	2.06		2.72*		1.51		.72		4.12**	
F-statistic	4.68***		5.49***		4.54***		2.64***		6.23***	
Adjusted R^2	.18		.21		.17		.09		.24	
Mean of Dep. Var.	.53		.41		.33		.61		.19	

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*p<.05; **p<.01; ***p<.001

Independent Variables	Referrals	
	Coeff	(F)
Constant	.12	
Physician Specialty:		
Family Practice	-.11	(2.16)
Pediatrics	-.07	(.67)
Physician Characteristics:		
Age	-.004	(2.31)
Board Certification	-.01	(.04)
Solo Practice	.05	(.66)
Patient Characteristics:		
Age	-.001	(.32)
Sex (male=0, female=1)	.04	(.80)
Multiple Conditions	.07	(1.85)
Severity-Complexity	-.01	(.10)
Urgency	.08	(7.19)**
Encounter Characteristics:		
Office Visit	---	
Professional Referral	.11	(4.49)*
Number of Visits	---	
Geographic Characteristics:		
Northeast Region	-.03	(.12)
North Central Region	-.04	(.29)
South Region	-.11	(1.97)
SMSA Status	.01	(.04)
Joint F-statistics, geographic dummies removed	.72	
F-statistic	3.26***	
Adjusted R^2	.12	
Mean of Dep. Var.	.17	

*p<.05; **p<.01; ***p<.001

TABLE V-7-C

GEOGRAPHICAL BREAKDOWN
CONDITION: PNEUMONIA (ICDA = 480-486)
COMPONENT OF CARE: CHEST X-RAY

	Family Medicine			Internal Medicine			Pediatrics			Emergency Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	45.1	(234)	(520)	53.6	(387)	(838)	15.1	(759)	(1941)	81.9	(55)	(92)
SMSA	44.2	(124)	(266)	56.9	(321)	(663)	14.3	(592)	(1502)	83.6	(44)	(74)
Non-SMSA	46.1	(111)	(254)	37.8	(66)	(175)	17.7	(168)	(439)	75.0	(11)	(18)
Northeast	42.5	(29)	(49)	60.4	(109)	(171)	7.2	(144)	(331)	87.7	(8)	(13)
SMSA	38.5	(26)	(44)	63.4	(93)	(140)	8.2	(122)	(279)	70.3	(3)	(5)
Non-SMSA	75.8	(3)	(5)	43.3	(16)	(31)	1.8	(22)	(52)	100.0	(5)	(8)
North Central	44.3	(85)	(206)	55.8	(95)	(264)	23.4	(141)	(394)	86.9	(17)	(29)
SMSA	43.4	(32)	(84)	59.4	(74)	(189)	20.9	(121)	(318)	85.7	(16)	(26)
Non-SMSA	44.8	(53)	(122)	43.3	(21)	(75)	39.2	(20)	(76)	100.0	(2)	(3)
South	47.1	(81)	(184)	48.4	(101)	(228)	16.1	(357)	(880)	86.6	(15)	(25)
SMSA	48.7	(38)	(90)	54.0	(77)	(172)	14.9	(252)	(616)	91.9	(12)	(22)
Non-SMSA	45.7	(43)	(94)	30.2	(24)	(56)	19.0	(105)	(264)	61.4	(3)	(3)
West	44.6	(38)	(81)	48.5	(83)	(175)	11.4	(118)	(336)	68.5	(15)	(25)
SMSA	44.1	(27)	(48)	49.6	(78)	(162)	12.3	(96)	(289)	76.9	(13)	(21)
Non-SMSA	45.7	(11)	(33)	31.2	(5)	(13)	7.3	(21)	(47)	21.7	(2)	(4)

TABLE V-7-D

GEOGRAPHICAL BREAKDOWN
CONDITION: PNEUMONIA (ICDA = 480-486)
COMPONENT OF CARE: LABORATORY TESTS

	Family Practice			Internal Medicine			Pediatrics			Emergency Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	29.7	(234)	(520)	33.0	(387)	(838)	15.1	(759)	(1941)	59.8	(55)	(92)
SMSA	28.6	(124)	(266)	35.2	(321)	(663)	13.6	(592)	(1502)	67.6	(44)	(74)
Non-SMSA	31.0	(111)	(254)	22.7	(66)	(175)	20.6	(168)	(439)	28.7	(11)	(18)
Northeast	41.5	(29)	(49)	36.0	(109)	(171)	6.7	(144)	(331)	37.4	(8)	(13)
SMSA	37.4	(26)	(44)	38.1	(93)	(140)	7.2	(122)	(279)	70.0	(3)	(5)
Non-SMSA	75.8	(3)	(5)	24.6	(16)	(31)	4.1	(22)	(52)	14.8	(5)	(8)
North Central	27.0	(85)	(206)	36.2	(95)	(264)	19.5	(141)	(394)	72.1	(17)	(29)
SMSA	28.3	(32)	(84)	39.2	(74)	(189)	19.5	(121)	(318)	72.7	(16)	(26)
Non-SMSA	26.3	(53)	(122)	25.6	(21)	(75)	19.7	(20)	(76)	66.7	(2)	(3)
South	29.2	(81)	(184)	28.3	(101)	(228)	19.2	(357)	(880)	61.0	(15)	(25)
SMSA	23.3	(38)	(90)	31.0	(77)	(172)	16.0	(252)	(616)	65.7	(12)	(22)
Non-SMSA	34.4	(43)	(94)	19.6	(24)	(56)	27.1	(105)	(264)	38.6	(3)	(3)
West	28.0	(38)	(81)	31.3	(82)	(175)	7.8	(118)	(336)	56.6	(15)	(25)
SMSA	28.2	(27)	(48)	32.1	(78)	(162)	8.1	(96)	(289)	62.9	(13)	(21)
Non-SMSA	27.6	(11)	(33)	17.6	(5)	(13)	6.4	(21)	(47)	21.7	(2)	(4)

TABLE V-7-E

GEOGRAPHICAL BREAKDOWN
CONDITION; PNEUMONIA (ICDA = 480-486)
COMPONENT OF CARE: CULTURES

	Family Practice			Internal Medicine			Pediatrics			Emergency Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	9.6	(234)	(520)	27.0	(387)	(838)	13.2	(759)	(1941)	9.0	(55)	(92)
SMSA	11.6	(124)	(266)	28.8	(321)	(663)	14.9	(592)	(1502)	4.4	(44)	(74)
Non-SMSA	7.4	(111)	(254)	18.2	(66)	(175)	7.1	(168)	(439)	27.4	(11)	(18)
Northeast	16.7	(29)	(49)	34.2	(109)	(171)	11.4	(144)	(331)	31.6	(8)	(13)
SMSA	18.7	(26)	(44)	36.4	(93)	(140)	12.1	(122)	(279)	.0	(3)	(5)
Non-SMSA	.0	(3)	(5)	21.9	(16)	(31)	7.6	(22)	(52)	53.4	(5)	(8)
North Central	1.8	(85)	(206)	17.4	(95)	(264)	17.0	(141)	(394)	5.8	(17)	(29)
SMSA	1.9	(32)	(84)	16.9	(74)	(189)	17.7	(121)	(318)	3.2	(16)	(26)
Non-SMSA	1.7	(53)	(122)	18.9	(21)	(75)	12.8	(20)	(76)	33.3	(2)	(3)
South	13.1	(81)	(184)	31.1	(101)	(228)	12.7	(357)	(880)	.0	(15)	(25)
SMSA	8.7	(38)	(90)	35.0	(77)	(172)	15.4	(252)	(616)	.0	(12)	(22)
Non-SMSA	17.1	(43)	(94)	18.6	(24)	(56)	6.4	(105)	(264)	.0	(3)	(3)
West	14.2	(38)	(81)	23.2	(82)	(175)	12.0	(118)	(336)	9.4	(15)	(25)
SMSA	20.2	(27)	(48)	24.6	(78)	(162)	13.6	(96)	(289)	11.0	(13)	(21)
Non-SMSA	.0	(11)	(33)	.0	(5)	(13)	4.7	(21)	(47)	.0	(2)	(4)

TABLE V-7-F

GEOGRAPHICAL BREAKDOWN
CONDITION: PNEUMONIA (ICDA = 480-486)
COMPONENT OF CARE: SYSTEMIC DRUGS

	Family Practice			Internal Medicine			Pediatrics			Emergency Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	55.2	(234)	(520)	63.9	(387)	(838)	61.6	(759)	(1941)	41.4	(55)	(92)
SMSA	59.8	(124)	(266)	64.7	(321)	(663)	62.6	(592)	(1502)	41.4	(44)	(74)
Non-SMSA	50.1	(111)	(254)	60.2	(66)	(175)	58.4	(168)	(439)	41.3	(11)	(18)
Northeast	57.6	(29)	(49)	62.7	(109)	(171)	62.4	(144)	(331)	21.4	(8)	(13)
SMSA	59.2	(26)	(44)	63.1	(93)	(140)	68.1	(122)	(279)	33.6	(3)	(5)
Non-SMSA	44.0	(3)	(5)	60.7	(16)	(31)	30.5	(22)	(52)	12.9	(5)	(8)
North Central	49.9	(85)	(206)	65.7	(95)	(264)	57.5	(141)	(394)	46.6	(17)	(29)
SMSA	54.9	(32)	(84)	63.0	(74)	(189)	56.0	(121)	(318)	41.5	(16)	(26)
Non-SMSA	47.0	(53)	(122)	74.9	(21)	(75)	66.8	(20)	(76)	100.0	(2)	(3)
South	63.8	(81)	(184)	70.0	(101)	(228)	62.7	(357)	(880)	45.3	(15)	(25)
SMSA	72.0	(38)	(90)	75.7	(77)	(172)	65.0	(252)	(616)	38.6	(12)	(22)
Non-SMSA	56.5	(43)	(94)	51.2	(24)	(56)	57.2	(105)	(264)	77.2	(3)	(3)
West	46.8	(38)	(81)	56.0	(82)	(175)	62.4	(118)	(336)	42.5	(15)	(25)
SMSA	48.7	(27)	(48)	57.1	(78)	(162)	57.4	(96)	(289)	46.2	(13)	(21)
Non-SMSA	42.4	(11)	(33)	38.0	(5)	(13)	85.0	(21)	(47)	21.7	(2)	(4)

TABLE V-7-G

GEOGRAPHICAL BREAKDOWN
CONDITION: PNEUMONIA (ICDA = 480-486)
COMPONENT OF CARE: INJECTION OTHER

	Family Practice			Internal Medicine			Pediatrics			Emergency Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	13.8	(234)	(520)	18.9	(387)	(838)	8.7	(759)	(1941)	33.7	(55)	(92)
SMSA	13.6	(124)	(266)	21.3	(321)	(663)	8.5	(592)	(1502)	33.0	(44)	(74)
Non-SMSA	14.0	(111)	(254)	7.7	(66)	(175)	9.4	(168)	(439)	36.3	(11)	(18)
Northeast	10.2	(29)	(49)	25.8	(109)	(171)	17.4	(144)	(331)	46.4	(8)	(13)
SMSA	11.5	(26)	(44)	27.6	(93)	(140)	18.4	(122)	(279)	36.3	(3)	(5)
Non-SMSA	.0	(3)	(5)	16.0	(16)	(31)	9.8	(22)	(52)	53.4	(5)	(8)
North Central	7.5	(85)	(206)	18.5	(95)	(264)	24.4	(141)	(394)	45.4	(17)	(29)
SMSA	2.9	(32)	(84)	22.8	(74)	(189)	5.6	(121)	(318)	46.5	(16)	(26)
Non-SMSA	10.2	(53)	(122)	3.6	(21)	(75)	10.5	(20)	(76)	33.3	(2)	(3)
South	18.6	(81)	(184)	22.8	(101)	(228)	12.4	(357)	(880)	16.8	(15)	(25)
SMSA	24.7	(38)	(90)	28.1	(77)	(172)	12.9	(252)	(616)	12.2	(12)	(22)
Non-SMSA	13.1	(43)	(94)	5.8	(24)	(56)	11.2	(105)	(264)	38.6	(3)	(3)
West	20.4	(38)	(81)	5.5	(82)	(175)	7.3	(118)	(336)	30.2	(15)	(25)
SMSA	12.5	(27)	(48)	5.5	(78)	(162)	7.1	(96)	(289)	35.6	(13)	(21)
Non-SMSA	38.0	(11)	(33)	6.8	(5)	(13)	8.2	(21)	(47)	.0	(2)	(4)

TABLE V-7-H

GEOGRAPHICAL BREAKDOWN
CONDITION: PNEUMONIA (ICDA = 480-486)
COMPONENT OF CARE: REFERRAL

	Family Practice			Internal Medicine			Pediatrics			Emergency Medicine		
	%	n (w)	n	%	n (w)	n	%	n (w)	n	%	n (w)	n
U.S. Total	7.7	(321)	(493)	16.8	(370)	(796)	4.0	(729)	(1860)	70.3	(51)	(85)
SMSA	7.4	(116)	(255)	18.3	(311)	(633)	4.5	(570)	(1446)	70.1	(41)	(70)
Non-SMSA	8.1	(105)	(238)	9.0	(59)	(163)	2.2	(158)	(414)	71.2	(10)	(15)
Northeast	3.9	(29)	(49)	24.4	(102)	(159)	4.3	(142)	(325)	82.6	(7)	(12)
SMSA	4.3	(26)	(44)	27.8	(88)	(130)	4.3	(120)	(273)	73.4	(2)	(4)
Non-SMSA	.0	(3)	(5)	3.9	(14)	(29)	4.2	(22)	(52)	87.1	(5)	(8)
North Central	6.1	(78)	(189)	10.2	(92)	(253)	3.5	(136)	(377)	69.5	(17)	(29)
SMSA	7.2	(30)	(80)	8.0	(71)	(179)	3.4	(116)	(304)	69.7	(16)	(26)
Non-SMSA	5.3	(49)	(109)	17.8	(21)	(74)	4.1	(19)	(73)	66.7	(2)	(3)
South	8.7	(80)	(181)	13.6	(95)	(216)	3.4	(341)	(843)	75.7	(15)	(25)
SMSA	11.1	(37)	(89)	15.6	(76)	(169)	4.2	(243)	(598)	78.7	(12)	(22)
Non-SMSA	6.6	(42)	(92)	5.3	(19)	(47)	1.3	(98)	(245)	61.4	(3)	(3)
West	12.8	(34)	(74)	18.5	(81)	(168)	6.1	(110)	(315)	57.0	(12)	(19)
SMSA	5.1	(22)	(42)	19.6	(76)	(155)	6.7	(90)	(271)	60.3	(11)	(18)
Non-SMSA	28.2	(11)	(32)	.0	(5)	(13)	3.0	(19)	(44)	.0	(1)	(1)

TABLE V-7-I

GEOGRAPHICAL BREAKDOWN
CONDITION: PNEUMONIA (ICDA = 480-486)
COMPONENT OF CARE: VISIT DURATION

	Family Practice			Internal Medicine			Pediatrics			Emergency Medicine		
	Minutes	n (w)	n	Minutes	n (w)	n	Minutes	n (w)	n	Minutes	n (w)	n
U.S. Total	11.4	(219)	(471)	19.4	(373)	(807)	11.0	(694)	(1808)	22.4	(50)	(84)
SMSA	11.9	(114)	(239)	20.9	(308)	(636)	11.3	(551)	(1424)	23.8	(40)	(68)
Non-SMSA	10.7	(105)	(232)	12.7	(65)	(171)	10.0	(143)	(384)	16.9	(10)	(16)
Northeast	13.8	(29)	(48)	21.9	(105)	(164)	11.9	(141)	(327)	15.1	(8)	(13)
SMSA	13.9	(26)	(43)	24.1	(88)	(133)	12.5	(119)	(275)	17.5	(3)	(5)
Non-SMSA	13.6	(3)	(5)	10.7	(16)	(31)	8.4	(22)	(52)	13.4	(5)	(8)
North Central	9.9	(81)	(190)	19.9	(92)	(256)	12.9	(131)	(362)	26.7	(16)	(27)
SMSA	9.5	(32)	(82)	22.4	(71)	(183)	13.0	(114)	(297)	27.6	(14)	(24)
Non-SMSA	10.1	(49)	(108)	11.3	(21)	(73)	12.4	(18)	(65)	18.3	(2)	(3)
South	11.4	(75)	(163)	16.0	(97)	(217)	9.8	(307)	(793)	26.2	(15)	(25)
SMSA	12.7	(35)	(77)	16.4	(74)	(163)	9.9	(224)	(572)	26.6	(12)	(22)
Non-SMSA	10.2	(41)	(86)	14.5	(23)	(54)	9.5	(83)	(221)	24.6	(3)	(3)
West	12.8	(33)	(70)	19.8	(80)	(170)	11.1	(115)	(326)	16.9	(11)	(19)
SMSA	11.8	(22)	(37)	20.0	(75)	(157)	11.0	(94)	(280)	17.3	(10)	(17)
Non-SMSA	14.7	(11)	(33)	17.0	(5)	(13)	11.3	(21)	(46)	12.2	(1)	(2)

TABLE V-12-A

COEFFICIENTS FROM REGRESSION EQUATIONS PREDICTING COMPONENTS OF CARE FOR PNEUMONIA (ICDA:480), INCLUDING REGION AND HEALTH MANPOWER SHORTAGE DESIGNATION VARIABLES, OFFICE FIRST VISIT, NON-SMSA COUNTIES (N=227)

	Chest X-ray		Laboratory Tests		Cultures		Systemic Drugs		Injection Other	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	.13		-.40		.21		-.14		-.20	
Physician Specialty:										
Family Practice	-.12	(.68)	.21	(1.98)	-.38	(6.79)*	.34	(3.02)	.04	(.10)
Pediatrics	-.33	(4.15)*	.31	(3.50)	-.31	(3.55)	.43	(3.79)	.04	(.06)
Physician Characteristics:										
Age	-.008	(11.81)***	.01	(4.50)*	.000	(.003)	.01	(7.09)**	-.002	(.96)
Board Certification	-.07	(1.87)	-.08	(2.29)	.04	(.70)	-.08	(1.36)	-.04	(.65)
Solo Practice	-.12	(4.60)*	-.19	(11.19)***	-.06	(1.02)	-.04	(.31)	-.02	(.21)
Patient Characteristics:										
Age	.002	(1.05)	.01	(21.91)***	-.001	(.45)	.000	(.000)	.002	(1.85)
Sex (male=0, female=1)	.02	(.22)	.002	(.003)	.03	(.44)	-.03	(.30)	.04	(.96)
Multiple Conditions	-.04	(.54)	-.04	(.70)	.01	(.06)	.08	(1.35)	-.02	(.26)
Severity-Complexity	.19	(16.53)***	-.03	(.37)	.08	(2.75)	.02	(.001)	.08	(3.38)
Urgency	.08	(7.27)**	.02	(.40)	.002	(.003)	.12	(7.52)**	.06	(4.44)*
Encounter Characteristics:										
Professional Referral	.53	(8.41)**	.23	(1.42)	.09	(.22)	-.12	(.22)	-.13	(.61)
Geographic Characteristics:										
Northeast Region	.06	(.40)	-.06	(.36)	.12	(1.63)	-.09	(.54)	-.07	(.67)
North Central Region	.25	(11.87)***	.05	(.41)	.13	(2.97)	.03	(.07)	-.01	(.02)
South Region	.16	(7.12)**	.10	(2.52)	.03	(.17)	-.11	(1.87)	.06	(1.09)
Health Manpower Shortage Designation:										
Whole County	.09	(1.03)	-.05	(.33)	.01	(.01)	.12	(.92)	.03	(.13)
Part County	.08	(2.25)	.04	(.43)	-.05	(.80)	-.28	(13.50)***	.09	(2.71)
F-statistic	10.03***		3.51***		1.28		3.34***		1.68	
Adjusted R^2	.39		.15		.02		.14		.05	
Mean of Dep. Var.	.18		.13		.11		.74		.09	

*p<.05; **p<.01; ***p<.001

TABLE V-12-A (cont.)

Independent Variables	Referral Coeff	 (F)
Constant		
Physician Specialty:		
Family Practice	-.08	(1.36)
Pediatrics	-.11	(1.92)
Physician Characteristics:		
Age	.001	(.69)
Board Certification	-.01	(.28)
Solo Practice	.02	(.75)
Patient Characteristics:		
Age	-.001	(.32)
Sex (male=0, female=1)	.005	(.05)
Multiple Conditions	.01	(.28)
Severity-Complexity	-.002	(.01)
Urgency	-.002	(.02)
Encounter Characteristics:		
Professional Referral	.29	(10.44)***
Geograhpic Characteristics:		
Northeast Region	.003	(.004)
North Central Region	.01	(.09)
South Region	-.02	(.36)
Health Manpower Shortage Designation:		
Whole County	-.02	(.13)
Part County	.03	(1.32)
F-statistic	1.51	
Adjusted R^2	.03	
Mean of Dep. Var.	.02	

*p<.05; **p<.01; ***p<.001

TABLE V-12-B

COEFFICIENTS FROM REGRESSION EQUATIONS PREDICTING COMPONENTS OF CARE FOR PNEUMONIA (ICDA:480), INCLUDING REGION AND HEALTH MANPOWER SHORTAGE DESIGNATION VARIABLES, OFFICE FOLLOW-UP VISITS, NON-SMSA COUNTIES (N=109)

	Chest X-ray		Laboratory Tests		Cultures		Systemic Drugs		Injection Other	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	-.44		-.25		.25		-.11		-.42	
Physician Specialty:										
Family Practice	.12	(.45)	.12	(.55)	-.08	(1.29)	.001	(.000)	.06	(.41)
Pediatrics	.14	(.43)	.17	(.76)	-.22	(5.81)*	-.08	(.13)	.01	(.01)
Physician Characteristics:										
Age	.01	(1.16)	-.004	(.55)	-.003	(2.04)	.01	(1.07)	.003	(.76)
Board Certification	-.16	(2.47)	-.05	(.28)	-.03	(.54)	-.06	(.30)	.01	(.02)
Solo Practice	-.10	(.87)	-.06	(.45)	.02	(.19)	-.14	(1.42)	.07	(1.32)
Patient Characteristics:										
Age	.001	(.22)	.004	(2.30)	-.003	(4.85)*	-.01	(4.40)*	-.001	(.47)
Sex (male=0, female=1)	.01	(.01)	.01	(.02)	-.02	(.27)	.07	(.54)	.07	(1.76)
Multiple Conditions	-.18	(2.95)	-.23	(6.01)*	-.03	(.50)	.08	(.45)	-.09	(2.57)
Severity-Complexity	.28	(8.68)**	-.14	(2.62)	-.01	(.05)	-.08	(.64)	.14	(7.17)**
Urgency	-.03	(.13)	.25	(14.23)***	.06	(3.68)	.20	(6.04)*	-.002	(.003)
Encounter Characteristics:										
Professional Referral	-.30	(.42)	-.41	(.96)	-.09	(.19)	.51	(1.01)	-.16	(.39)
Number of Visits	-.01	(.56)	-.000	(.001)	-.002	(.11)	-.01	(.16)	.01	(.31)
Geographic Characteristics:										
Northeast Region	.15	(.38)	.03	(.02)	-.04	(.14)	.06	(.05)	.02	(.01)
North Central Region	.43	(5.69)*	.03	(.03)	.02	(.07)	.36	(3.34)	.01	(.02)
South Region	.10	(.26)	.15	(.78)	.05	(.37)	.23	(1.28)	.11	(1.10)
Health Manpower Shortage Designation:										
Whole County	.35	(3.20)	-.001	(.000)	.002	(.001)	.35	(2.77)	-.07	(.37)
Part County	.01	(.004)	.13	(1.07)	.08	(1.85)	.08	(.28)	-.02	(.07)
F-statistic	2.33**		1.39		1.10		1.45		1.70	
Adjusted R^2	.17		.06		.02		.07		.10	
Mean of Dep. Var.	.40		.21		.04		.55		.08	

*$p<.05$; **$p<.01$; ***$p<.001$

TABLE V-12-B (cont.)

	Referral	
Independent Variables	Coeff	(F)
Constant	-.04	
Physician Specialty:		
Family Practice	.06	(1.42)
Pediatrics	.02	(.15)
Physician Characteristics:		
Age	-.001	(.46)
Board Certification	-.07	(5.93)*
Solo Practice	.06	(3.88)
Patient Characteristics:		
Age	-.000	(.24)
Sex (male=0, female=1)	.001	(.001)
Multiple Conditions	.02	(.39)
Severity-Complexity	.03	(1.47)
Urgency	.01	(.29)
Encounter Characteristics:		
Professional Referral	.02	(.03)
Number of Visits	-.001	(.08)
Geographic Characteristics:		
Northeast Region	.02	(.09)
North Central Region	.06	(1.37)
South Region	.003	(.003)
Health Manpower Shortage Designation:		
Whole County	.002	(.001)
Part County	.02	(.15)
F-statistic	1.36	
Adjusted R^2	.05	
Mean of Dep. Var.	.02	

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*p<.05; **p<.01; ***p<.001

TABLE V-12-C

COEFFICIENTS FROM REGRESSION EQUATIONS PREDICTING COMPONENTS OF CARE FOR NASOPHARYNGITIS AND UPPER RESPIRATORY INFECTION (ICDA:460, 465), INCLUDING REGION AND HEALTH MANPOWER SHORTAGE DESIGNATION VARIABLES, OFFICE FIRST VISIT, NON-SMSA COUNTIES (N=707)

	Chest X-ray		Laboratory Tests		Cultures		Systemic Drugs		Injection Other	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	.04		-.15		-.22		.90		-.18	
Physician Specialty:										
Family Practice	.005	(.07)	-.02	(.13)	.08	(4.03)*	-.20	(13.18)***	.21	(27.02)***
Pediatrics	.04	(3.68)	-.06	(1.39)	.18	(16.25)***	-.36	(33.62)***	.11	(5.44)*
Physician Characteristics:										
Age	-.001	(4.57)*	.002	(2.59)	.001	(.57)	-.004	(6.51)	.005	(12.75)***
Board Certification	-.01	(.33)	.04	(2.17)	.01	(.29)	.26	(48.49)***	-.12	(19.23)***
Solo Practice	-.01	(.20)	-.10	(11.68)***	-.001	(.000)	.11	(8.65)**	-.01	(.06)
Patient Characteristics:										
Age	.001	(3.85)*	.000	(.61)	-.000	(.001)	-.000	(.000)	.001	(3.56)
Sex (male=0, female=1)	-.005	(.21)	.01	(.36)	.04	(3.45)	-.02	(.35)	-.01	(.05)
Multiple Conditions	-.02	(2.96)	.08	(6.99)**	-.005	(.03)	.04	(1.11)	-.05	(3.46)
Severity-Complexity	.01	(1.11)	.05	(5.75)*	.08	(18.97)***	.05	(4.77)*	.02	(.77)
Urgency	.001	(.01)	.04	(5.94)*	.01	(.81)	.01	(.05)	.001	(.002)
Encounter Characteristics:										
Professional Referral	.13	(5.65)*	-.10	(.65)	.04	(.15)	.07	(.25)	-.04	(.13)
Geographic Characteristics:										
Northeast Region	-.05	(4.16)*	-.11	(3.57)	.04	(.59)	-.11	(2.22)	-.13	(5.35)*
North Central Region	.02	(1.00)	-.01	(.11)	.05	(2.14)	-.04	(.72)	-.04	(1.42)
South Region	-.01	(.52)	-.04	(.88)	-.03	(.76)	-.02	(.17)	-.06	(2.35)
Health Manpower Shortage Designation:										
Whole County	.01	(.68)	-.09	(5.77)*	-.02	(.46)	.14	(9.59)**	-.04	(1.39)
Part County	.06	(13.50)***	-.02	(.38)	-.01	(.10)	-.01	(.11)	.78	(5.86)*
F-statistic	3.55***		4.05***		4.31***		8.12***		5.87***	
Adjusted R^2	.05		.06		.07		.14		.10	
Mean of Dep. Var.	.02		.11		.08		.79		.10	

*p<.05; **p<.01; ***p<.001

TABLE V-12-C (cont.)

	Referral	
Independent Variables	Coeff	(F)
Constant	.06	
Physician Specialty:		
Family Practice	-.03	(3.24)
Pediatrics	-.02	(1.97)
Physician Characteristics:		
Age	-.000	(.07)
Board Certification	.01	(1.45)
Solo Practice	.02	(2.54)
Patient Characteristics:		
Age	-.000	(.33)
Sex (male=0, female=1)	-.003	(.11)
Multiple Conditions	.04	(13.03)***
Severity-Complexity	.003	(.24)
Urgency	-.01	(5.78)*
Encounter Characteristics:		
Professional Referral	-.04	(.88)
Geographic Characteristics:		
Northeast Region	-.02	(1.00)
North Central Region	.005	(.11)
South Region	-.01	(.57)
Health Manpower Shortage Designation:		
Whole County	.16	(1.79)
Part County	-.001	(.01)
F-statistic	1.80*	
Adjusted R^2	.02	
Mean of Dep. Var.	.01	

*p<.05; **p<.01; ***p<.001

TABLE V-12-D

COEFFICIENTS FROM REGRESSION EQUATIONS PREDICTING COMPONENTS OF CARE FOR NASOPAHRYNGITIS AND UPPER RESPIRATORY INFECTION (ICDA:460, 465), INCLUDING REGION AND HEALTH MANPOWER SHORTAGE VARIABLES, OFFICE FOLLOW-UP VISIT, NON-SMSA COUNTIES (N=75)

	Chest X-ray		Laboratory Tests		Cultures		Systemic Drugs		Injection Other	
Independent Variables	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)	Coeff	(F)
Constant	.07		-.05		-.11		.26		-.58	
Physician Specialty:										
Family Practice	-.02	(.03)	.08	(.13)	.01	(.01)	-.06	(.03)	.31	(2.16)
Pediatrics	-.10	(.75)	.03	(.02)	.12	(1.06)	.10	(.08)	.22	(.94)
Physician Characteristics:										
Age	-.001	(.31)	-.002	(.20)	.001	(.12)	.003	(.19)	-.002	(.12)
Board Certification	.09	(2.62)	.13	(1.38)	.03	(.28)	.32	(4.02)	-.11	(1.13)
Solo Practice	.05	(.70)	-.10	(.61)	.05	(.58)	-.10	(.26)	.16	(1.65)
Patient Characteristics:										
Age	-.001	(.83)	-.001	(:07)	-.000	(.08)	.001	(.13)	.01	(7.36)
Sex (male=0, female=1)	-.07	(3.38)	.13	(2.36)	-.04	(.74)	.03	(.06)	-.05	(.32)
Multiple Conditions	.03	(.48)	-.02	(.05)	.05	(.98)	.06	(.16)	-.10	(1.15)
Severity-Complexity	.03	(1.38)	.14	(5.99)*	.01	(.13)	.15	(3.26)	-.09	(2.37)
Urgency	.02	(.30)	.02	(.08)	.02	(.24)	-.08	(.68)	.17	(7.84)**
Encounter Characteristics:										
Number of Visits	-.01	(.44)	-.01	(.-7)	-.01	(.42)	.002	(.01)	-.01	(.42)
Geographic Characteristics:										
Northeast Region	.002	(.000)	-.42	(1.18)	.92	(22.41)***	-1.03	(3.35)	.39	(1.10)
North Central Region	-.08	(1.57)	.09	(.47)	.01	(.02)	-.16	(.63)	.26	(3.78)
South Region	-.02	(.07)	-.11	(.51)	.02	(.07)	-.18	(.60)	.30	(4.03)*
Health Manpower Shortage Designation:										
Whole County	-.03	(.12)	.11	(.36)	-.04	(.19)	.35	(1.61)	-.12	(.46)
Part County	.06	(.91)	-.08	(.41)	-.11	(.37)	-.17	(79)	.07	(.28)
F-statistic	.93		1.29		2.83**		1.30		2.47*	
Adjusted R^2	.00		.06		.28		.06		.24	
Mean of Dep. Var.	.03		.13		.04		.53		.16	

*p<.05; **p<.01; ***p<.001

TABLE V-12-D (cont.)

	Referral	
Independent Variables	Coeff	(F)
Constant	.13	
Physician Specialty:		
Family Practice	.04	(.30)
Pediatrics	-.004	(.002)
Physician Characteristics:		
Age	-.001	(.33)
Board Certification	.03	(.40)
Solo Practice	.01	(.03)
Patient Characteristics:		
Age	-.001	(1.68)
Sex (male=0, female=1)	-.03	(1.18)
Multiple Conditions	.002	(.002)
Severity-Complexity	-.01	(.06)
Urgency	-.01	(.26)
Encounter Characteristics:		
Number of Visits	-.001	(.03)
Geographic Characteristics:		
Northeast Region	-.02	(.02)
North Central Region	-.01	(.02)
South Region	-.04	(.43)
Health Manpower Shortage Designation:		
Whole County	-.11	(.02)
Part County	-.27	(.30)
F-statistic	.43	
Adjusted R^2	.00	
Mean of Dep. Var.	.01	

*p<.05; **p<.01; ***p<.001

*U.S. GOVERNMENT PRINTING OFFICE: 1981-0-726-436/1361